UNITED STATES OF AMERICA
POSTAL RATE COMMISSION

Before:

Chairman Gleiman, Vice Chairman Haley,
Commissioners LeBlanc, and Omas*

Postal Rate and Fee Changes, 1997 Docket No. R97-1

APPENDICES TO OPINION
AND
RECOMMENDED DECISION
VOLUME 2

Washington, DC 20268-0001
May 11, 1998

*Commissioner Ruth Y. Goldway was sworn in on April 15, 1998 and did not participate in this decision.

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ADVERTISING MAIL MARKETING ASSOCIATION *(AMMA)* — AMMA and its members include commercial and nonprofit mailers and companies that serve and supply mailers. Its members use Standard (A) Mail, certain aspects of Standard (B) Mail, and Special Services for marketing, promotion, fundraising and related activities.

ADVO, INC. (*Advo*) — Advo provides bulk mailing services and advertising programs, including shared mail programs, to advertisers and retailers. Advo has interest in matters affecting bulk nonprofit mail classification and rates.

AGRICULTURAL PUBLISHERS ASSOCIATION (*APA*) — APA is a nonprofit corporation with a membership of 14 companies, which publish 80 agricultural magazines. APA member publishers rely on Periodicals class as their principle means of distributing publications. They also use First-Class Mail for business correspondence, billing, and statements of account; Standard (A) Mail for promotion and subscription sales; and Standard (B) Mail for distribution of books and educational materials.

ALLIANCE OF INDEPENDENT STORE OWNERS AND PROFESSIONALS (*AISOP*) — AISOP is an association that represents approximately 3,500 small business retailers, service providers, and professionals. AISOP members rely on locally-distributed print advertising to reach customers in their trade areas. Its members' concerns are those of small business advertisers who seek reasonably-priced advertising mail. Although AISOP members use all classes of mail, they primarily use saturation mail advertising.

ALLIANCE OF NONPROFIT MAILERS (*ANM*) — ANM is a nonprofit corporation which represents the interests of nonprofit organizations in postal matters. ANM members include many of the nation's largest charitable, religious, educational, scientific and other nonprofit organizations, as well as many smaller nonprofit organizations and umbrella groups. ANM members mail large volumes of Standard mail and publications.

AMERICAN BANKERS ASSOCIATION (*ABA*) — ABA, a nonprofit membership organization incorporated in the District of Columbia, has member banks located in all 50 states. The banking industry is one of the largest users of First-Class Mail.

AMERICAN BEEKEEPING FEDERATION, INC. (*Beekeepers*) — The American Beekeeping Federation, Inc., is a federation of groups, persons, and entities having a common interest in beekeeping and related enterprises. The members oppose the rate increase of special handling parcel post mail, which is used to transport bees throughout the United States.

AMERICAN BUSINESS PRESS (*ABP*) — ABP is an association with 158 member companies, which publish 937 trade, business, professional, and medical periodicals. ABP members' publications consist of magazines and newspapers that use regular Periodicals class. Virtually all ABP member publications are nationally-distributed periodicals, although some are small periodicals with an average circulation of fewer than 40,000 copies per issue. ABP member publications pay nearly $200 million in periodical postage alone, in addition to expenditures for other classes of postage.

AMERICAN FINANCIAL SERVICES ASSOCIATION (*AFSA*) — AFSA is the trade association for approximately 360 non-traditional market-funded providers of financial services to consumers and small businesses. Market-funded lenders provide between 15 percent and 20 percent of all United States consumer credit. AFSA members have more than 10,000 offices in the United States with outstanding receivables of more than $200 billion.

AMERICAN LIBRARY ASSOCIATION (*ALA*) — ALA is a national association of libraries with members who are direct or indirect users of most classes of mail and are particularly heavy users of the library rate subclass of Standard Mail.

AMERICAN POSTAL WORKERS UNION, AFL-CIO (*APWU*) — APWU, an affiliate of the AFL-CIO, is the exclusive collective bargaining representative of postal employees in the clerk, maintenance, special delivery messenger, and motor vehicle service crafts nationwide. APWU is also the National Labor Relations Board certified-bargaining representative of postal employees in several non-mail processing units. APWU members are concerned about changes in postal operations that may have a significant effect on their employment.

AMERICAN PUBLIC POWER ASSOCIATION (*APPA*) — APPA is the national service organization representing municipal and other state and local government-owned electric utilities. APPA members mail more than 190 million bills annually to their customers.

ASSOCIATION OF ALTERNATE POSTAL SYSTEMS (*AAPS*) — AAPS is a trade association whose members deliver saturation mail. As such, AAPS members compete with the Postal Service for the distribution of pieces that would otherwise qualify as Standard (A) Mail. In addition to providing private delivery services, AAPS members, such as Advertisers Postal Service (a Gaylord, Michigan-based company), operate mailing services and prepare mail for various shopping guides, newspapers, and retailers.

ASSOCIATION OF AMERICAN PUBLISHERS (*AAP*) — AAP is the principal representative of the book publishing industry in the United States. Its members include large and small publishing houses, as well as university, religious and nonprofit publishers. AAP

members are extensive users of numerous rate classifications, including parcel post, bound printed matter, special standard, and library rate.

ASSOCIATION OF PAID CIRCULATION PUBLICATIONS, INC. (*APCP*) — APCP is a nonprofit organization representing a number of periodical publishers and affiliated companies that are large users of mail services. Predominantly, APCP members use Periodicals class to mail their publications. They also use First-Class, Standard (A), and Standard (B) Mail.

ASSOCIATION OF PRIORITY MAIL USERS, INC. (*APMU*) — APMU is a nonprofit association of business firms that are substantial users of Priority Mail. They use other classes of mail as well.

BROOKLYN UNION GAS COMPANY (*Brooklyn Union*) — Brooklyn Union is a New York State corporation whose primary business is the purchase and sale of natural gas. Brooklyn Union is a large user of mail services, primarily for billing and business reply mail.

DOUGLAS F. CARLSON (*Carlson*) — Mr. Carlson, an administrative analyst at the University of California, Berkeley, is representing himself in this proceeding.

CLASSROOM PUBLISHERS ASSOCIATION (*CPA*) — CPA is a trade association whose members publish classroom magazines, books and other classroom materials. CPA members use postal services to mail their publications and are substantially impacted by any increase in the postal rate.

COALITION OF RELIGIOUS PRESS ASSOCIATIONS (*CRPA*) — CRPA, a nondenominational organization open to all faiths, represents the interests of nonprofit religious publications, such as the monthly *Church Herald*. Most of CRPA's 1,200 members have circulations below 50,000 and mail their publications both regionally and nationally using Periodicals and Standard (A) Mail.

CONDÉ NAST PUBLICATIONS, INC. (*Condé Nast*) — Condé Nast, a publisher of numerous consumer magazines covering fashion, lifestyle and other subjects, is a major user of all mail classes and delivers its publications to subscribers via Periodicals class.

CONSUMERS UNION OF UNITED STATES, INC. (*Consumers Union*) — Consumers Union is a nonprofit membership organization chartered in 1936 to provide information, education, and counsel about consumer goods and services and management of the family income. Consumers Union's income is derived solely from the sale of *Consumer Reports* magazine, its other publications and media products, and non-commercial grants.

CTC DISTRIBUTION SERVICES, L.L.C. (*CTC*) — CTC ships nearly 100 million parcels through the Postal Service making it a major user of the postal system. In promoting and marketing its services, it is one of the nation's leading DBMC parcel shippers.

DIRECT MARKETING ASSOCIATION, INC. (*DMA*) — DMA is a trade association representing more than 3,000 direct marketers. DMA members use all classes of mail, but primarily Standard (A) Mail.

DISTRICT PHOTO, INC. (*District*) — District provides mail-order photofinishing services and sells photo-related products nationwide. District is a major user of the Postal Service in terms of both quantity of items mailed and costs of postage.

DOWDEN PUBLISHING COMPANY (*Dowden*) — Dowden is the publisher of newsletters and smaller-circulation medical journals whose primary publications are *OBG Management* and *Podiatry Today*. Dowden is a user of all classes of mail, but primarily uses Periodicals class.

DOW JONES & COMPANY, INC. (*Dow Jones*) — Dow Jones, the publisher of *The Wall Street Journal*, *Barron's*, and other financial publications, is a large user of all classes of mail, but primarily uses Periodicals class for the delivery of its publications.

EDISON ELECTRIC INSTITUTE (*EEI*) — EEI is an association of shareholder-owned electric companies, affiliates, and associates. EEI is concerned with costing and pricing issues, particularly, as they affect First-Class Mail.

E-STAMP CORPORATION (*E-Stamp*) — E-Stamp Corporation is a Houston, Texas and Palo Alto, California-based technology company. It is developing a secure Internet-based software solution that will enable customers to print postage from their personal computers, while addressing an envelope or package label, and also purchase postage via the Internet. As the provider of this product, E-Stamp has a direct interest in rate classification.

FEDERAL EXPRESS CORPORATION (*FedEx*) — FedEx provides express delivery services throughout the United State and most foreign countries. FedEx competes directly and indirectly with the Postal Service, but is also a substantial user of its services.

FIRST IMAGE MANAGEMENT COMPANY (*First Image*) — First Image is one of the nation's largest mailers of letter-sized mail, including First-Class Mail that is presorted and prebarcoded. The Postal Service's proposed changes in rates and fees would affect First Image's postage costs, its costs of mail preparation, and its postage discounts.

FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION (*Gift Fruit Shippers*) — Gift Fruit Shippers' members ship packages of fruit as gifts throughout the nation via Standard (B) parcel post. Members of Gift Fruit Shippers also use First- and Standard (A) Mail extensively.

GREETING CARD ASSOCIATION, INC. (*GCA*) — GCA is a national trade association representing more than 170 greeting card publishers and suppliers to the industry. Its members account for about 90 percent of the greeting card market in the United States. GCA is an advocate for First-Class, citizen mailers.

GRUNER + JAHR USA PUBLISHING (*G+J Publishing*) — G+J Publishing is a major publisher of periodicals.

HALLMARK CARDS, INC. (*Hallmark*) — Hallmark is the largest publisher of greeting cards in the United States and is a large user of postal services. Since its primary product line is greeting cards, generally sent by First-Class Mail, HCI has a major interest in changes affecting First Class.

HEARST CORPORATION (*Hearst*) — Hearst is a New York-based diversified media company, which owns daily newspapers, such as the *San Francisco Examiner*, weekly newspapers, and magazines such as *Redbook* and *Good Housekeeping.* Hearst also has interests in broadcast and cable TV media and makes use of all classes of mail.

INLAND CAPITAL CORPORATION (*ICC*) — ICC and its affiliates mail First Class and Standard class matter, in addition to using many other postal services.

INTERNATIONAL LABOR COMMUNICATIONS ASSOCIATION (*ILCA*) — ILCA is a nonprofit organization representing the interests of labor organizations and their editors in postal rate matters. ILCA's members mail a large volume of Periodicals and Standard Mail at the special nonprofit rate.

KNIGHT-RIDDER, INC. (*Knight-Ridder*) — Knight-Ridder is a diversified media company that has interests in newspapers and provides information services to consumers and businesses. It makes extensive use of First-Class, Periodicals, and Standard Mail.

LAB*One*, INC., OSBORN LABORATORIES, INC., AND CLINICAL REFERENCE LABORATORY, INC. (*LabOne et al.*) — Lab*One et al.* consists of the three largest providers of Risk Assessment Testing services to the life insurance industry. They depend on various carriers, including the Postal Service, to deliver materials to life insurance applicants who return the samples for chemical and biological analysis.

MAGAZINE PUBLISHERS OF AMERICA (*MPA*) — MPA is an association of approximately 200 magazine publishing companies. Some of its members, such as Rodale Press, Inc., also

publish newsletters and books. MPA members use Periodicals class to distribute their publications and use other classes for their billing and marketing operations.

MAIL ADVERTISING SERVICE ASSOCIATION INTERNATIONAL (*MASA*) — MASA is a trade association of approximately 500 Standard rate mailers. MASA has a direct interest in changes concerning bulk regular rate Standard (A) Mail, as well as bound printed matter.

MAIL ORDER ASSOCIATION OF AMERICA (*MOAA*) — MOAA is an association consisting of companies engaged in mail-order retailing. The members of MOAA make extensive use of First-Class and Standard rate mail.

MAJOR MAILERS ASSOCIATION (*MMA*) — MMA is an association of First-Class mailers, who are among the largest users of presorted and prebarcoded First-Class Mail. MMA representatives participate on the Postal Service's Mailers' Technical Advisory, First-Class, and Letters Implementation Committees.

MCGRAW-HILL COMPANIES, INC. (*McGraw-Hill*) — McGraw-Hill is a global multi-media enterprise that provides information services and publishes magazines such as *Business Week* and *BYTE*. More than 400 of McGraw-Hill's business, legal, professional and technical publications are distributed primarily through Periodicals class, and also by First-Class Mail. McGraw-Hill relies on bulk regular rate Standard Mail to promote and market its diverse products and services and makes substantial use of Standard (B) Mail to distribute the books it publishes. In addition, McGraw-Hill uses First-Class and Express Mail for general correspondence.

MERCK-MEDCO MANAGED CARE, L.L.C. (*Merck-Medco*) — Merck-Medco, the leading pharmacy benefits manager in the United States, manages pharmaceutical care for millions of Americans covered by employer-funded health plans, major insurance carriers, labor unions, public sector programs, and managed care plans. Merck-Medco is a major user of the United States mail in terms of quantity of items shipped and postage costs.

MEREDITH CORPORATION (*Meredith*) — Meredith is a broad-based communications company that is active in the magazine and book publishing, printing, broadcasting, real estate, and book club industries. It is a major user of all classes of mail, giving special attention to First-Class Mail.

METROMAIL (*Metromail*) —Metromail is a leading provider of database marketing, direct mail marketing, and reference products and services. Metromail was acquired by R.R. Donnelly & Sons Company, the world's largest commercial printer, in 1987 but became independent in June 1996.

PETER J. MOORE & ASSOCIATES, L.L.C. (*Moore*) — Moore is a consulting company which, among its other activities, provides consultation on postal matters to a broad spectrum of clients who are major users of mail services.

MYSTIC COLOR LAB (*Mystic*) — Mystic is engaged in providing mail-order photofinishing services and selling photo-related products nationwide. Mystic is a major user of the Postal Service in terms of both quantity of items mailed and postage costs.

NASHUA PHOTO INC. (*Nashua*) — Nashua provides mail-order photofinishing services and sells photo-related products. Nashua is a major user of the Postal Service in terms of both quantity of items mailed and postage costs.

NATIONAL ASSOCIATION OF LETTER CARRIERS, AFL-CIO (*NALC*) — NALC, an affiliate of the AFL-CIO, is the collective bargaining representative for more than 240,000 letter carriers employed by the Postal Service. As a result, the members of NALC have an interest in the financial well-being of the Postal Service.

NATIONAL ASSOCIATION OF POSTMASTERS OF THE UNITED STATES (*NAPUS*) — NAPUS is a management organization representing more than 43,000 active and retired postmasters throughout the United States. The members derive their livelihoods from their employment with the Postal Service, or receive pensions based on their prior employment with the Postal Service. As a result, the members of NAPUS have an interest in the financial well-being of the Postal Service.

NATIONAL ASSOCIATION OF PRESORT MAILERS (*NAPM*) — NAPM represents presort mailers and presort service bureaus that participate in the Postal Service's presort programs. Collectively NAPM members process more than 16 billion pieces of letter-size mail annually. NAPM representatives have served on the Postal Service's Mailers' Technical Advisory Committee and Competitive Task Force.

NATIONAL FEDERATION OF NONPROFITS (*NFN*) — NFN is a national association of nonprofit organizations that hold nonprofit postal permits. NFN represents many of the Nation's smaller nonprofit organizations. Both the NFN and its members use regular rate bulk mail.

NATIONAL LEAGUE OF POSTMASTERS OF THE UNITED STATES (*League*) — The League is a nonprofit professional management association of more than 32,000 postmasters and postal and federal employees. Members derive their income from their employment with the Postal Service and provide postal service to millions of customers. The proposed rate increase for post office boxes for category D post offices is of interest to the League.

NATIONAL NEWSPAPER ASSOCIATION (*NNA*) — NNA, a nonprofit organization and trade association, represents more than 4,000 community newspapers across the country.

The member newspapers rely heavily on Periodicals class, with particular reliance on the preferred rate subclass within-county mail. The association's members are also users of other classes of mail, including Standard (A) and First-Class Mail.

NATIONAL POSTAL MAIL HANDLERS UNION, AFL-CIO (*NPMHU*) — NPMHU, an affiliate of the AFL-CIO, serves as the exclusive bargaining representative for more than 55,000 mail handlers employed by the Postal Service. As a result, the members of NPMHU have an interest in the financial well-being of the Postal Service.

NATIONAL POSTAL POLICY COUNCIL, INC. (*NPPC*) — The Council is a trade association comprised of companies that are primarily First-Class mailers. The members of the Council include major insurance, financial, retail, manufacturing, utility, and telecommunication companies, such as American Express, Bell & Howell, Bell Atlantic, State Farm Insurance, Brooklyn Union, and Chase Manhattan Bank. Since its founding in 1982, the Council has worked with the Postal Service in a cooperative effort to improve postal services.

NATIONAL RETAIL FEDERATION (*NRF*) — NRF is the world's largest retail trade association representing leading department, specialty, mass merchandise and independent stores. NRF members represent an industry that encompasses more than 1.4 million United States retail establishments and employs more than 20 million people, or one in five American workers. NRF members are significant users of First-Class Mail in connection with their retail, credit, and other operations.

NEWSPAPER ASSOCIATION OF AMERICA (*NAA*) — NAA is a nonprofit corporation serving more than 1,600 newspapers in the United States and Canada, the majority of which account for more than 87 percent of the daily newspaper circulation in the United States. In addition, several hundred individuals and companies allied with the $46 billion newspaper industry are associate members of NAA. NAA members use all classes of mail.

NIAGARA TELEPHONE COMPANY (*Niagara*) — Niagara is a local exchange telephone company located in Niagara, Wisconsin. Niagara is a user of First-Class Mail for several purposes, including the delivery of its monthly telephone bills.

OFFICE OF THE CONSUMER ADVOCATE (*OCA*) — OCA, pursuant to its Congressional mandate, must "represent the interests of the general public" in rate and classification proceedings before the Commission. In carrying out this responsibility, OCA gives voice to segments of the general public generally unable to pay for private representation in Commission proceedings, such as individual consumers, small businesses, and nonprofit organizations.

OHIO POULTRY ASSOCIATION, TEXAS POULTRY FEDERATION, IOWA POULTRY ASSOCIATION, AND NEBRASKA POULTRY INDUSTRIES (*Poultry Associations*) — The Poultry Associations make use of the Postal Service's special service/special handling deliveries of chicks and other hatchery items. The Postal Service is currently the only provider of such services for the poultry industry.

PARCEL SHIPPERS ASSOCIATION (*PSA*) — PSA is an association of companies that makes extensive use of Standard (A) Mail for the delivery of catalogs and parcels to carry out its operations.

J.C. PENNEY COMPANY, INC. (*Penney*) — J.C. Penney, best known for its department stores, also operates catalog, credit, and insurance businesses. It is a major user of First-Class, Standard (A), and Standard (B) Mail in connection with all of its operations.

DAVID B. POPKIN (*Popkin*) — Mr. Popkin is a citizen-advocate for improved postal services.

READER'S DIGEST ASSOCIATION (*RDA*) — RDA is a New York-based company that produces books, music, videos, CD-ROM products, and magazines. RDA makes extensive use of First-Class, Periodicals class, Standard (A) regular bulk rate, Standard (B) Special, and bound printed matter rate.

RECORDING INDUSTRY ASSOCIATION OF AMERICA, INC. (*RIAA*) — RIAA is a trade association whose members market recording and other home entertainment products. RIAA members make use of bulk regular Standard (A) Mail for marketing and other purposes. In addition, RIAA members make use of First-Class Mail for billing, collection, and similar functions.

R.R. DONNELLEY & SONS COMPANY (*Donnelley*) — Donnelly is a world leader in managing, reproducing, and distributing print and digital information for the publishing, retailing, merchandising, and information-technology markets. It specializes in the production of catalogs, inserts, magazines, books, directories, financial printing, and computer documentation. Donnelly is a Standard (A) drop-shipper.

RUSMAR, INC. (*Rusmar*) — Rusmar is a broadly-based consulting company which, among its other activities, provides consultation on postal matters to major magazine publishers such as Times Mirror, National Geographic Society, and Springhouse Corporation. These clients are major users of all mail classes.

SATURATION MAILERS COALITION (*SMC*) — The Saturation Mailers Coalition is a coalition of national, regional, and local mailers and mail users that use Standard (A) enhanced carrier route saturation mail for distribution of free community papers and shared mail

programs. Coalition members use a variety of classes of mail in the course of their business.

SEATTLE FILMWORKS, INC. (*Seattle*) — Seattle Filmworks is engaged in providing mail-order photofinishing services and selling photo-related products nationwide. Seattle is a major user of the Postal Service in terms of both quantity of items mailed and postage costs.

SJ CONSULTING GROUP (*SJ Consulting*) — SJ Consulting, based in Sewickley, Pennsylvania, provides consulting services to major shippers, mailers, and vendors.

SMARTMAIL, INC. (*SmartMail*) — SmartMail offers the public complete mailing and shipping services for the distribution and mailing of flat-size mail pieces. SmartMail and its customers are directly affected by mail classification changes and increases in rates for Standard Mail.

TIME WARNER, INC. (*Time Warner*) — Time Warner owns Time, Inc., and Warner Communications, Inc., and, through a wholly owned subsidiary, a percentage of Time Warner Entertainment. Through these companies, Time Warner publishes and distributes books and magazines and is engaged in the fields of filmed entertainment, recorded music, music publishing, and cable television. They use all classes of mail.

TMR SERVICES (*TMR*) — TMR Services provides professional consulting in postal policy and distribution strategy. TMR represents several publishers and print clients that have interests in the various classes of mail affected by the current rate proposals.

UNION OF NEEDLETRADES, INDUSTRIAL AND TEXTILE EMPLOYEES (*UNITE*) — UNITE was founded in 1995 by the merger of two of the nation's oldest unions, The International Ladies' Garment Workers' Union (ILGWU) and the Amalgamated Clothing and Textile Workers Union (ACTWU). UNITE members work in basic apparel, textile, auto parts, auto supply industries, millinery, shoe, laundry, glove and tanning, bag and packing, retail and related industries. The merged union represents workers from the United States, Canada, and Puerto Rico.

UNITED PARCEL SERVICE (*UPS*) — UPS provides parcel delivery services throughout the United States via air and ground operations and also provides an international delivery service. UPS competes with the Postal Service but is also a substantial user of postal services, especially First-Class Mail.

UNITED STATES POSTAL SERVICE (*Postal Service*) — The Postal Service was created as an independent establishment of the executive branch by the Postal Reorganization Act of 1970. According to the Act, "The Postal Service shall have as its basic function the obligation to provide postal services to bind the Nation together through the personal,

educational, literary, and business correspondence of the people. It shall provide prompt, reliable and efficient services to patrons in all areas and shall render postal services to all communities." The Postal Service's operating revenues approached $60 billion in 1997 making the Postal Service the nation's ninth largest company.

U.S. NEWS & WORLD REPORT, L.P. (*U.S. News*) — U.S. News is one of the largest publishers of periodicals and user of all classes of mail, including First-Class and Standard (A) Mail. U.S. News relies upon Periodicals class as the principal means of distributing its magazine.

VAL-PAK DEALERS' ASSOCIATION, INC. (*VPDA*) — Val-Pak is an association that represents the approximately 250 United States franchises of Val-Pak Direct Marketing Systems, Inc., a direct mail cooperative advertising firm that uses Standard Mail.

VAL-PAK DIRECT MARKETING SYSTEMS, INC. (*VPDMS*) — Val-Pak Direct Marketing Systems is the nation's largest direct mail cooperative advertising firm, which operates through approximately 250 franchises nationwide. The franchises and approximately 1,200 sales representatives provide direct mail advertising services for approximately 100,000 small business owners. Val-Pak and Val-Pak franchises are heavy users of Standard Mail, as well as other classes of mail.

CAROL WRIGHT PROMOTIONS, INC. (*Carol Wright*) — Carol Wright is a substantial user of Standard Mail, as well as other classes of mail, in terms of both quantity of items mailed and postage costs.

WITNESSES' TESTIMONY

ADRA, Mohammad A. (*Postal Service)*	USPS-T-38
ALEXANDROVICH, Joseph A. (*Postal Service)*	USPS-T-5
ANDREW, Gary M. (*AMMA; RIAA, et al.; MOAA, et al.)*	AMMA-T-2; RIAA, et al.-T-1; MOAA, et al.-RT-1
BALL, Joseph E. (*Gift Fruit Shippers)*	FGFSA-T-2
BARON, Donald (*Postal Service)*	USPS-T-17, T-53, T-54, RT-1
BENTLEY, Richard E. (*Brooklyn Union; MMA)*	BUG-T-1; MMA-T-1
BERNSTEIN, Peter (*Postal Service)*	USPS-T-31
BOURK, Gilbert P. III (*LabOne, et al.)*	Lab*One*, et al.-T-2
BRADLEY, Michael D. (*Postal Service)*	USPS-T-13; T-14, ST-55, RT-5
BRADSTREET, Kenneth L. (*AAPS)*	AAPS-T-1
BREHM, Christopher S. (*Postal Service)*	USPS-T-21
BUC, Lawrence G. (*DMA)*	DMA-T-1
BUCKEL, Harry J. (*SMC)*	SMC-T-1, RT-1
CALLOW, James F. (*OCA)*	OCA-T-500
CARLSON, Douglas F. (*Carlson)*	DFC-T-1
CAVNAR, Nicholas (*ABP)*	ABP-T-3
CHOWN, Sharon L. (*NAA)*	NAA-T-1
CHRISTENSEN, Laurits R. (*Postal Service)*	USPS-RT-7
CLARK, John L. (*CTC)*	CTC-T-1, RT-1
CLIFTON, James A.(*ABA/EEI/NAPM; ABA/NAA)*	ABA/EEI/NAPM-T-1; ABA/NAA-T-1
COHEN, Rita D. (*MPA)*	MPA-T-2, RT-1
COLLINS, Sheryda C. (*OCA)*	OCA-T-700
CRAIN, Keith (*ABP)*	ABP-T-1
CROWDER, Antoinette (*Joint Parties; Advo)*	JP-NOI-1; Advo-RT-1
CROWLEY, Thomas D. (*LabOne, et al.)*	Lab*One*, et al.-T-1
CRUM, Charles L. (*Postal Service)*	USPS-T-28
CURRIE, John V. (*Postal Service)*	USPS-T-42

DANIEL, Sharon (*Postal Service)*	USPS-T-29, ST-43
DAVIS, Frank E. (*Gift Fruit Shippers)*	FGFSA-T-3
DEGEN, Carl G. (*Postal Service)*	USPS-T-12, ST-47, RT-6
DONLAN, Michael (*NAA)*	NAA-T-2
ELLARD, Timothy D. (*Postal Service)*	USPS-RT-14
EMIGH, Carolyn A. (*NFN)*	NFN-T-1
ERICKSON, Ken C. (*GCA)*	GCA-T-1
FRONK, David R. (*Postal Service)*	USPS-T-32
GLICK, Sander A. (*MPA)*	MPA-T-3, T-4
GREEN, Joe (*AAPS)*	AAPS-T-2
HALDI, John (*ANM; NDMS; NDMS, et al.; VP/CW)*	ANM-T-1; NDMS-T-1, T-2, T-3; VP/CW-T-1, RT-1
HARAHUSH, Thomas W. (*Postal Service)*	USPS-T-3, ST-49
HATFIELD, Philip A. (*Postal Service)*	USPS-T-16, T-25
HEATH, Max (*NNA)*	NNA-T-1
HEHIR, Michael K. (*McGraw-Hill)*	MH-T-1
HENDERSON, J. Stephen (*UPS)*	UPS-T-3
HIGGINS, Paul (*MPA)*	MPA-NOI4-1, RT-2
HUME, Peter D. (*Postal Service)*	USPS-T-18
JELLISON, James V. (*PSA)*	PSA-T-1
KANEER, Kirk T. (*Postal Service)*	USPS-T-35, RT-19
LEWIS, Jeffrey W. (*Postal Service)*	USPS-RT-9
LION, Paul M. (*Postal Service)*	USPS-T-24, ST-51
LITTLE, Christopher M. (*MPA)*	MPA-T-1
LUCIANI, Ralph L. (*UPS)*	UPS-T-4, ST-4

MACDONALD, R. Timothy (*Postal Service)*	USPS-T-10
MACHARG, Dennis (*NAPM)*	NAPM-T-1
MAYES, Virginia J. (*Postal Service)*	USPS-T-37
MCGARVY, Joyce (*ABP)*	ABP-T-2
MCGRANE, Michael (*Postal Service)*	USPS-ST-44, RT-12
MEREWITZ, Leonard (*Gift Fruit Shippers)*	FGFSA-T-1
MILLER, Michael W. (*Postal Service)*	USPS-T-23, RT-17
MODEN, Ralph J. (*Postal Service)*	USPS-T-4
MOELLER, Joseph D. (*Postal Service)*	USPS-T-36
MULLIN, Dale A. (*PSA)*	PSA-T-2
MURPHY, Michael (*Postal Service)*	USPS-RT-18
MUSGRAVE, Gerald L. (*Postal Service)*	USPS-T-8
NEEDHAM, Susan W. (*Postal Service)*	USPS-T-39, RT-23
NEELS, Kevin (*UPS)*	UPS-T-1, ST-1
NELSON, Michael A. (*Postal Service)*	USPS-T-19
NIETO, Norma B. (*Postal Service)*	USPS-T-2
O'BANNON, John H. (*OCA)*	OCA-T-200
O'HARA, Donald J. (*Postal Service)*	USPS-T-30
OTUTEYE, Godfred (*AISOP)*	AISOP-T-1
PAFFORD, Bradley V. (*Postal Service)*	USPS-T-1, ST-48
PANZAR, John C. (*Postal Service)*	USPS-T-11, RT-13
PATELUNAS, Richard (*Postal Service)*	USPS-T-15
PETERSON, Sydney R. (*Niagara)*	NTC-T-1
PICKETT, John T. (*Postal Service)*	USPS-RT-2
PLUNKETT, Michael K. (*Postal Service)*	USPS-T-40, RT-20
PORRAS, M. Richard (*Postal Service)*	USPS-RT-11
PRESCOTT, Roger C. (*MOAA)*	MOAA-RT-1
RASTOK, Tom (*LabOne, et al.)*	Lab*One*, et al.-T-3
RIOS, Julie F. (*Postal Service)*	USPS-RT-10

SCHENK, Leslie M. (*Postal Service)*	USPS-T-27, RT-22
SCHICK, Joseph E. (*AMMA)*	AMMA-T-1
SCHMUTZLER, Neal W. (*LabOne, et al.)*	Lab*One*, et al.-T-4
SECKAR, Paul G. (*Postal Service)*	USPS-T-26
SELLICK, Stephen E. (*UPS)*	UPS-T-2, ST-2, RT-1
SHARKEY, Thomas M. (*Postal Service)*	USPS-T-33
SHEEHAN, Robert J. (*Postal Service)*	USPS-RT-16
SHERMAN, Roger (*OCA)*	OCA-T-300
SHEW, William B. (*Dow Jones)*	DJ-T-1
SMITH, J. Edward, Jr. (*OCA)*	OCA-T-600, RT-1000
SMITH, Marc A. (*Postal Service)*	USPS-ST-45, ST-46
SPEIGHTS, Patsy (*NNA)*	NNA-T-2
STAPERT, John (*CRPA)*	CRPA-T-1
STEELE, Jon M. (*Postal Service)*	USPS-RT-8
STEIDTMANN, Carl E. (*Postal Service)*	USPS-RT-15
STRALBERG, Halstein (*Time Warner)*	TW-T-1, RT-1
TAKIS, William M. (*Postal Service)*	USPS-T-41
TALMO, Daniel (*Postal Service)*	USPS-ST-50
TAUFIQUE, Altaf H. (*Postal Service)*	USPS-T-34, RT-21
TAYMAN, William P. (*Postal Service)*	USPS-T-9
THOMPSON, Pamela A. (*OCA)*	OCA-T-100
THREADGILL, Eugene E. (*APPA)*	APPA-T-1
THRESS, Thomas E. (*Postal Service)*	USPS-T-7
TOLLEY, George S. (*Postal Service)*	USPS-T-6
TREWORGY, David E. (*Postal Service)*	USPS-T-22, ST-52
WADE, Stephen H. (*Postal Service)*	USPS-T-20
WENDLER, Guy (*ABP)*	ABP-RT-1
WILLETTE, W. Gail (*OCA)*	OCA-T-400
YING, John S. (*Postal Service)*	USPS-RT-4
YOUNG, James D. (*Postal Service)*	USPS-RT-3
ZWIEG, Steve (*PSA)*	PSA-T-3

WITNESSES' BIOGRAPHIES

ADRA, Mohammad A. (*Postal Service*) — Mr. Adra, an economist in the pricing division of marketing systems, has worked on a variety of rate issues for the Postal Service including providing analytical support for the Special Services filing, Docket No. MC96-3. This is his second appearance before the Commission. He received his MBA from California State University and has pursued supplemental graduate courses in economics at the University of Colorado.

ALEXANDROVICH, Joseph A. (*Postal Service*) — Mr. Alexandrovich is an economist in product finance for the Postal Service. During his career at the Postal Service, he has served as an operations specialist, marketing specialist, customer service support specialist, analyst, director, casual clerk, distribution clerk, and as a special assistant to the Deputy Postmaster General. He presented rebuttal testimony in MC95-1. He received his MBA from the University of Chicago and has completed graduate work in international relations.

ANDREW, Gary M. (*AMMA; RIAA, et al.; MOAA, et al.*) — Dr. Andrew is a senior consultant with the economic consulting firm, L.E. Peabody & Associates, Inc., located in Alexandria, Virginia. He has frequently presented testimony in government rate proceedings, including Docket Nos. R90-1 and R94-1 before the Commission. His writings have appeared in a number of professional journals. He received his Ph.D. from Case Institute of Technology. He has also completed advanced econometrics courses at that institution.

BALL, Joseph E. (*Gift Fruit Shippers*) — Mr. Ball is the executive vice president of Florida Gift Fruit Shippers Association. His duties and responsibilities have involved all aspects of transportation matters pertaining to gift fruit shipments, including development of charges, rates for pickup, handling, line haul, and delivery at destination. He is also a member of the board of directors of Parcel Shippers Association. A witness in two previous Commission proceedings, he received his MBA in personnel administration from George Washington University.

BARON, Donald (*Postal Service*) — Mr. Baron is vice president with Foster Associates, Inc., an economics consulting firm that has assisted the Postal Service in a wide variety of studies to measure and analyze product and operation costs since 1960. Prior to joining Foster Associates, he worked for Arthur D. Little, Inc., where he specialized in analysis of postal costs, as well as the development of economic models of postal demand and operational productivity. He has also published articles for economic journals on various postal costing and productivity issues. He received his MA

in economics from the University of Michigan and holds a JD from Washington University.

BENTLEY, Richard E. (*Brooklyn Union; MMA*) — Mr. Bentley is president of Marketing Designs, Inc., a marketing and consulting firm. He holds an MBA from Cornell University's School of Business and Public Administration. From 1973 until 1979, he worked for the Commission, where his responsibilities included analysis of Postal Service costs, volumes, rates, and operations. Since forming his own company in 1982, he has testified before the Commission in six major cases. In two recent classification cases, MC95-1 and MC96-3, he testified on behalf of mailer groups, including the Council of Public Utility Mailers, Brooklyn Union Gas Company, and Roadway Package Systems.

BERNSTEIN, Peter (*Postal Service*) — Mr. Bernstein is vice president of RCF Economic and Financial Consulting, Inc. His major responsibilities include forecasting, econometrics, and quantitative analysis activities. He is currently a faculty member in the Department of Economics at DePaul University of Chicago and has taught at Loyola University of Chicago and the University of Chicago, Graduate School of Business. He earned a master's degree in finance and economics from the University of Chicago Graduate School of Business. He has completed all course work and examinations toward a Ph.D. from the University of Chicago.

BOURK, Gilbert P. III (*LabOne, et al.*) — Mr. Bourk is vice president and general counsel of Osborn Laboratories Inc., in Olathe, Kansas. He is responsible for regulatory compliance, management of legal affairs, and reviewing packaging requirements for clinical specimen collection kits for both the private courier industry and the Postal Service.

BRADLEY, Michael D. (*Postal Service*) — Dr. Bradley is a professor of economics at George Washington University. He has published many articles on both econometrics and economic theory. Postal economics has been his major area of study for the last decade. He has participated in several proceedings before the Commission, testifying for the Postal Service on purchased transportation and city carrier costing. He has also served as a consultant to trade associations, manufacturing corporations, and government agencies. The recipient of numerous academic and non-academic awards, he holds a Ph.D. in economics from the University of North Carolina.

BRADSTREET, Kenneth L. (*AAPS*) — Mr. Bradstreet is executive director of the Association of Alternative Postal Systems, a position that carries the responsibility of representing the interests of the alternative delivery industry. He also is vice president and general manager of Advertisers Postal Service, a private delivery and mailing service located in Gaylord, Michigan. He has worked at AAPS since 1977 serving as its assistant district manager and assistant general manager. He is a co-founder of the

Coalition of Non-Postal Media. He has testified before the Commission in the R84-1 and R87-1 rate case proceedings and participated in the R90-1 and MC95-1 proceedings on behalf of AAPS.

BREHM, Christopher S. (*Postal Service*) — Mr. Brehm is a principle consultant in management consulting services for Price Waterhouse, L.L.P. During his career as a consultant, he has worked on numerous projects for the Postal Service, specializing in financial analysis. He received his MS in economics from the University of Maryland and has also completed all course work for a Ph.D. in economics at the University of Maryland, with a concentration in industrial organization and labor economics.

BUC, Lawrence G. (*DMA*) — Mr. Buc is the president of Project Performance Corporation (PPC). PPC is a consulting firm that provides economic, information technology, and environmental consulting services to private and public sector clients. As manager of the PPC finance group, he directs a practice that focuses on economic and cost analysis, as well as performing and reviewing cost estimates. He has analyzed postal costs for the Postal Service, the Commission, and private clients and has participated in six previous Commission rate cases. A graduate of Brown University, he received a master's degree in economics from George Washington University.

BUCKEL, Harry J. (*SMC*) — Mr. Buckel is the chief executive officer of Newport Media, Inc., the publisher of several shopper publications on Long Island, New York. He has been involved in community newspapers and the advertising shopper industry for more than 20 years. Formerly, he was the President of Harte-Hankes Shoppers and publisher of the PennySaver. Mr. Buckel has served as industry co-chairman of the Postmaster General's Work-Sharing Task Force and as chairman of the AMMA from 1991 through 1993. He earned his MS degree in regional economics from Michigan State University.

CALLOW, James F. (*OCA*) — Mr. Callow is a postal rate and classification specialist in the Commission's Office of the Consumer Advocate. He previously testified before this Commission in Dockets Nos. MC95-1 and MC96-3. Prior to joining the Office of the Consumer Advocate, he was special assistant to Postal Rate Commissioner H. Edward Quick, Jr. He has also worked for a US Senator and a member of Congress from Michigan and the Governor of the State of Michigan. He received his MS in accounting from Georgetown University.

CARLSON, Douglas F. (*Carlson*) — For the past 13 years, Mr. Carlson has studied the mail processing and distribution operations of the Postal Service. He provided testimony to the Commission in Docket No. MC96-3. He is representing himself in R97-1. He is an administrative analyst at the University of California, Berkeley where he earned his BA in economics and his JD from the Boalt Hall School of Law.

CAVNAR, Nicholas (*ABP*) — Mr. Cavnar is vice president, circulation, for Intertec Publishing Corporation. IPC publishes 68 trade and professional magazines and tabloids. As a member of the American Business Press Washington Legal Committee, Mr. Cavnar serves as a representative on the Mailers' Technical Advisory Committee. He is also a member of the Circulation Management Advisory Committee to BPA International, which provides circulation auditing services for more than 1,600 member periodicals.

CHOWN, Sharon L. (*NAA*) — Ms. Chown is a principal and co-founder of Industrial Economics, Inc. She has testified before the Commission in the R84-1, C87-2, R87-1, R90-1, and MC95-1 proceedings. She has conducted studies on the Postal Service's cost allocation system and rate design processes. She has held positions with the international economic and management consulting firms of Putnam, Hayes & Bartlett, Inc., and Data Resources, Inc., and has testified before the Ontario, New Brunswick, Nova Scotia, and Alberta, Canada, energy commissions and the Massachusetts Department of Public Utilities. She received her MS in industrial administration from Carnegie-Mellon University.

CHRISTENSEN, Laurits R. (*Postal Service*) — Dr. Christensen is the founder and chairman of Christensen Associates, the economic research and consulting firm that developed the Postal Service's Total Factor Productivity methodology. He has worked for regulatory commissions in the railroad, electric, telecommunication, and cable television industries and has provided testimony to Congress on regulatory matters. He received his MS in statistics and Ph.D. in economics from the University of California-Berkeley.

CLARK, John L. (*CTC*) — Mr. Clark is the founder and chief executive officer of CTC Distribution Services which is the largest shipper of small parcels in the United States to residences of individual consumers for the mail order industry. CTC provides documentation, collection, sortation, and transportation of parcels, which are then tendered to the Postal Service and United Parcel Service for residential delivery.

CLIFTON, James A. (*ABA/EEI/NAPM; ABA/NAA*) — Dr. Clifton is the founder and president of Washington Economics Consulting Group, Inc. WECG specializes in regulatory and economic policy analysis and provides litigation support in the areas of antitrust and economic damages. Previously, he was a professor of economics and business at the Catholic University of America. He has provided analyses and conducted studies for the trucking, semiconductor, electronics, telecommunications, broadcasting, and textile industries. He has also worked for Nathan Associates, Inc., the Center for Industrial Competitiveness, Inc., the US House of Representatives, and the US Chamber of Commerce. He holds a Ph.D. in economics from the University of Wisconsin-Madison. This is his fourth appearance before the Commission.

COHEN, Rita D. (*MPA*) — Ms. Cohen is the vice president for economic and legislative analysis at the Magazine Publishers of America. She is the Association's executive for the Mailers' Technical Advisory Committee and a member of the Postal Service's periodical advisory group. Before joining MPA, she was a vice president of the international consulting firm, ICF, Inc., based in Fairfax, Virginia, where she directed and performed economic and policy analyses for both private and government clients. She has worked as a statistician on the staff of the Commission, as a cost analyst in the revenue and cost analysis division of the Postal Service, and as an operations research analyst in the mail classification research division and office of rates, also at the Postal Service. She has presented seven pieces of testimony before the Commission. She has a master's degree in business and applied economics from the University of Pennsylvania where, as an undergraduate, she received the J. Parker Burst prize for outstanding achievement in statistics.

COLLINS, Sheryda C. (*OCA*) — Ms. Collins is a rate and classification analyst in the Commission's Office of the Consumer Advocate. She has testified before the Commission in the MC76-4, MC79-2, R80-1, MC95-1, and MC96-3 proceedings. As an analyst on the Commission's staff, Ms. Collins performed technical analyses for the Commission's R74-1, R87-1, R90-1, and R94-1 decisions, as well as for many of its classification decisions. She received a bachelor's degree from the University of Massachusetts. She has completed additional coursework in economics, public utility regulation, statistics, accounting, data processing, and programming.

CRAIN, Keith (*ABP*) — Mr. Crain is chairman of Crain Communications Inc., which has been a publisher of consumer, trade, and business publications since 1916. He is testifying on behalf of the American Business Press, the Coalition of Religious Press Associations, Dow Jones & Company, Inc., the Magazine Publishers of America, The McGraw-Hill Companies, Inc., the National Newspaper Association, and Time Warner.

CROWDER, Antoinette (*Joint Parties; ADVO*) — Ms. Crowder is a senior consultant with TRANSCOMM, Inc., an engineering and economic consulting firm in Falls Church, Virginia. During her career with TRANSCOMM, she has worked on a variety of projects dealing with costing, pricing, market demand studies, economic and financial analyses, and regulatory and pricing issues. She has been involved with postal ratemaking and policy matters for more than 17 years and has testified before the Commission in six proceedings. She received her MS in biology from George Mason University and has completed additional course work in economics, mathematics, and statistics.

CROWLEY, Thomas D. (*LabOne, et al.*) — Mr. Crowley, an economic consultant, is the president of L. E. Peabody & Associates, Inc., an Alexandria, Virginia economic consulting firm. He has presented evidence on economic ratemaking and costing principles before federal, state, and public commissions. He holds a BS degree in

economics and has completed graduate courses in transportation at George Washington University.

CRUM, Charles L. (*Postal Service*) — Mr. Crum has worked for the Postal Service since 1995 as an economist in the office of product finances. His focus has been on parcel issues at Bulk Mail Centers, Processing and Distribution Centers, delivery stations, and other facilities. Previously he was employed by Westvaco Corporation and was responsible for the fine paper and envelope divisions. He received his MBA from the Fuqua School of Business at Duke University.

CURRIE, John V. (*Postal Service*) — Mr. Currie is president of Currie Associates, Inc., which provides worldwide consulting, training, and auditing services related to the transportation of hazardous materials. Previously, he was corporate manager of hazardous materials transportation for the Digital Equipment Corporation, director of safety for the American Trucking Association, and supervisor for the New York State Police Hazardous Materials Enforcement Unit. Throughout his career he has observed the handling of hazardous materials at a variety of postal facilities.

DANIEL, Sharon (*Postal Service*) — Ms. Daniel, an economist and an operations research analyst, has worked in the office of product cost studies at the Postal Service since 1995. Prior to joining the Postal Service, she was a consultant with Price Waterhouse in the Center for Postal Consulting. She received her BS in mathematics and MS in operations research from the College of William and Mary. This is her second appearance before the Commission.

DAVIS, Frank E. (*Gift Fruit Shippers*) — Mr. Davis is the president of Pittman & Davis, Inc., a family-owned business that has operated continuously in the mail order industry since 1926. He has a BA and a BSBA from Trinity University. He has continued his education by taking classes on citriculture at Texas A & I, as well as attending seminars presented by the Direct Marketing Association.

DEGEN, Carl G. (*Postal Service*) — Mr. Degen is a senior vice president of Christensen Associates, an economic research and consulting firm in Madison, Wisconsin, where he works on productivity measurement in the transportation industries and the Postal Service, as well as providing litigation support and expert testimony for clients. In Docket R94-1, he testified on the Postal Service's In-Office Cost System. He also gave direct testimony in MC95-1 and MC96-2. He earned his MS in economics from the University of Wisconsin-Madison and has completed the course work and qualifying exams for his Ph.D.

DONLAN, Michael (*NAA*) — Mr. Donlan is a senior associate with Industrial Economics, Inc., Cambridge, Massachusetts. This is his first appearance before the Commission. He is a regulatory economist, with expertise in utility restructuring and rate

setting. He has worked on rate setting issues in the electric utility industry, as well as on the restructuring of Pennsylvania Power and Light and West Penn Power. He received his MBA from Stanford University.

ELLARD, Timothy D.(*Postal Service*) — Mr. Ellard is executive vice president of Opinion Research Corporation International (ORC), where he has been responsible for various research and management practices since 1964. He testified on behalf of the Postal Service in Docket No. R83-1 and appeared as a witness in Docket Nos. R90-1, MC91-1, and MC96-3. He received his MBA from the Wharton School of Business at the University of Pennsylvania, with a major in statistics and industrial management, and an AB from Harvard College.

EMIGH, Carolyn A. (*NFN*) — Ms. Emigh is a principal in the Non-Profit Service Group, a consulting firm that provides legal, economic, accounting, and management consulting services to nonprofit organizations. She has assisted the National Federation of Nonprofits (formerly the Nonprofit Mailers Federation) in representing the interests of nonprofit mailers before the Congress, federal agencies, state governments, and self-regulatory organizations. Previously, she was a professional staff economist to the Oversight and Investigations Subcommittee of the House Interstate and Foreign Commerce Committee and an economic policy advisor to the majority leader of the US Senate. A graduate of Pitzer College in Claremont, California, she completed her master's degree at The Johns Hopkins University.

ERICKSON, Ken C. (*GCA*) — Dr. Erikson is a research associate professor at the University of Missouri, Kansas City. His testimony is based in part on prior research conducted for the Hallmark Business Research Mother's Day Project in which he analyzed the cultural significance of greeting cards that are sent through the Postal Service. He holds a BA, MA, and Ph.D. In anthropology and has published extensively.

FRONK, David R. (*Postal Service*) — Mr. Fronk, a senior economist in pricing in marketing systems for the Postal Service, has developed domestic rate and fee proposals specifically related to First-Class Mail since 1966. Prior to joining the Postal Service, he worked as an economist and management consultant both independently and with Putnam, Hayes & Bartlett, Inc. Mr. Fronk received his MA in economics from George Washington University and his MBA from Stanford University.

GLICK, Sander A. (*MPA*) — Mr. Glick is a senior analyst at Project Performance Corporation (PPC), which provides management information technology and environmental consulting services in the public and private sectors. He received a master's degree in public administration from the Maxwell School of Citizenship and Public Affairs at Syracuse University.

GREEN, Joe (*AAPS*) — Mr. Green is the primary owner of R-J Delivery, an alternative delivery company, affiliated with Green Banner Publications. R-J Delivery was founded to control delivery of Green Banner Publication's newspapers. Their primary business is the distribution of free newspapers and standard mail type circulars to 48,000 residences in Southern Indiana. He has served on the board of directors of the Association of Alternative Postal Systems for nine years.

HALDI, John (*ANM; NDMS; NDMS, et al., VP/CW*) — Dr. Haldi is president of Haldi Associates, Inc., an economic and management consulting firm, whose clients have included government, business, and private organizations. He has testified before Congress and state legislatures, as well as the Commission, and has published numerous articles and consulting studies, including co-authoring the book: *Postal Monopoly: An Assessment of the Private Express Statutes*. He received his MA and Ph.D. in economics from Stanford University.

HARAHUSH, Thomas W. (*Postal Service*) — Mr. Harahush is a mathematical statistician in cost analysis and finance for the Postal Service. Since 1985 he has worked on a number of statistical issues in the areas of cost and service performance. He received his BS in mathematics from Pennsylvania State University, and has conducted graduate studies in mathematical statistics and survey sampling at George Washington University.

HATFIELD, Philip A. (*Postal Service*) — Mr. Hatfield is a consultant with the office of government services at Price Waterhouse, L.L.P., and is an affiliate of Price Waterhouse's Center for Postal Consulting, where he has been employed since 1994. His experience with the Postal Service includes projects specializing in cost estimation, rate design analyses, financial analysis, and volume variable cost analysis in transportation and mail processing. He received his BS in economics from the College of William and Mary.

HEATH, Max (*NNA*) — Mr. Heath is vice president and executive editor for Landmark Community Newspapers, Inc. (LCNI) which publishes 40 weekly and daily newspapers in 12 states. He is responsible for editorial and circulation development, postal and environmental issues, and is involved in recruitment, public relations and press association activities. He is the community newspaper industry's principal trainer on the use of postal services, compliance with regulatory requirements, and understanding sorting and work-sharing requirements. He also serves as a regional director for the National Newspaper Association and is a member of the NNA governing board.

HEHIR, Michael K. (*McGraw-Hill*) — Mr. Hehir is president of the Information Services Group of the McGraw-Hill Companies, Inc. He is responsible for managing the McGraw-Hill business units that publish such magazines as *Business Week*, *BYTE*, and more than 20 other publications that are mailed at Periodical Regular rates. Prior to joining McGraw-Hill in 1975, he held management positions at Equitable Life Assurance

Society and marketing posts with Burroughs Corporation and Tymshare, Inc. He holds a MBA in corporate finance from New York University and a certificate in management accounting from the Institute of Certified Management Accountants, Montvale, New Jersey.

HENDERSON, J. Stephen (*UPS*) — Dr. Henderson is an economist and a principal of the economic and management consulting firm of Putnam, Hayes & Bartlett, Inc. Prior to joining PHB, he held various positions in the Office of Economic Policy of the Federal Energy Regulatory Commission and was a senior institute economist at the National Regulatory Research Institute. During his tenure at FERC, he helped to coordinate a major policy initiative that opened the industry to competition at the wholesale level. This policy has fostered significant restructuring activity in the industry and has promoted competitive initiatives at the retail level in several states. He received his MA in economics from Georgetown University and his Ph.D. in economics from the University of Wisconsin-Madison.

HIGGINS, Paul (*MPA*) — Mr. Higgins is a senior analyst with Project Performance Corporation. Previously, he worked for the University of Washington, Cornell University, and the World Bank as a consultant and a graduate teaching assistant. He holds a MA in economics from Tulane University and is a doctoral candidate at the University of Washington, Department of Economics.

HUME, Peter D. (*Postal Service*) — Mr. Hume is a vice president of Foster Associates, Inc., a Washington, D.C. consulting firm. As a consultant to the Postal Service, he is responsible for performing studies aimed at improving the formulation of operating costs for postal ratemaking purposes. He testified before the Commission in the R76-1, R77-1, R84-1, R87-1, R90-1, MC95-1, and MC96-2 cases. He has drawn on his experience in simulation and modeling to design and implement nationwide data surveys used to develop postal costs. He has a master's degree in engineering from The Johns Hopkins University and has completed additional course work in management, finance, and data processing.

JELLISON, James V. (*PSA*) — Mr. Jellison is the executive vice president of the Parcel Shippers Association. During his 42 year career in the mailing industry, he has served as Senior Assistant Postmaster General, Operations, a mailing industry consultant, and as the resident manager of the PSA. He has also been involved with industry work groups, panel discussions, Postal Forums, and postal issue gatherings, representing both the Postal Service and industry perspective, based on his knowledge of the processing and transporting of various types of mail.

KANEER, Kirk T. (*Postal Service*) — Mr. Kaneer, an economist employed by the Postal Service in pricing, was formerly in the labor economics research division and was involved in labor negotiations. His current responsibilities include development of pricing

models and calculations for use in domestic rate design. Prior to joining the Postal Service, he worked at the Bureau of Labor Statistics in the office of prices and living conditions, consumer expenditures research division. He received a master of science degree in economics from Florida State University.

LEWIS, Jeffery W. (*Postal Service*) — Mr. Lewis, who began working for the Postal Service as a part-time letter carrier in 1974, is currently an operations specialist in delivery policies and programs. He is responsible for providing program leadership in enhancing on-street performance and also functional program support for the Delivery Confirmation program. He presented testimony before the Commission in Docket No. MC95-1. He received his MBA from George Washington University.

LION, Paul M. (*Postal Service*) — Dr. Lion is vice president with ALK Associates, Inc., a systems development and consulting firm serving the transportation industry. He has more than 30 years experience in planning, operations analysis, and the economics of large-scale systems. Previously he was employed by Arthur D. Little, Inc., where he was responsible for managing and directing consulting services related to technology planning for the Postal Service. He received his MSE, MA, and Ph.D. from Princeton University.

LITTLE, Christopher M. (*MPA*) — Mr. Little is the president of the Meredith Corporation Publishing Group. He is responsible for the strategic direction and management of all of Meredith's magazine and book operations. He was president of the Meredith Magazine Group before the company's magazine and book publishing divisions were combined. He also served Meredith as vice president and publishing director for *Better Homes and Gardens*. Before joining Meredith, he worked for The Washington Post Company and *Newsweek*, and was president of Crowles Magazine, Inc. He testified before the Commission in Docket No. MC91-3 as a witness for the Magazine Publishers Association. After graduating from Yale University, he received a law degree from the University of Texas. He also has completed the senior executive program at Stanford University's Graduate School of Business.

LUCIANI, Ralph L. (*UPS*) — Mr. Luciani is a principal and director for the international economic and management consulting firm Putnam, Hayes & Bartlett, Inc. Since 1990, he has directed work on issues relating to postal costing and rate design. Previously, he worked as an engineer at General Electric Company and as a financial analyst at IBM Corporation. He received his MS from the Graduate School of Industrial Administration at Carnegie-Mellon University.

MACDONALD, R. Timothy (*Postal Service*) — Mr. Macdonald is an accountant for the Postal Service. His responsibilities include the preparation of annual financial statements, the Annual Report, and the Comprehensive Statement to Congress. His accounting experience includes consulting and auditing private companies, nonprofit

organizations, government agencies, and federal- and state-regulated utilities. His BS in international economics and MS in accounting were both received from Georgetown University.

MACHARG, Dennis (*NAPM*) — Mr. MacHarg is president and founder of Advance Presort Services, a presort bureau based in Chicago, Illinois. He is also the president of the National Association of Presort Mailers and has served as a director since 1986. He has served on both the Postal Service's Mailers' Technical Advisory Committee and the Competitive Services Task Force.

MAYES, Virginia J. (*Postal Service*) — Ms. Mayes is an economist in the pricing division, marketing systems, of the Postal Service. Her work has encompassed a variety of rate issues including, but not limited to, caller service, parcel and expedited mail services, treatment of undeliverable mail, preferred rate mail categories, including Express Mail, and revenue foregone appropriations. She testified before the Commission in Docket Nos. R90-1, MC93-1. She completed her master's degree in economics and continues her graduate course work at Brown University.

MCGARVEY, Joyce (*ABP*) — As Distribution Director for Crain Communications, Inc., Ms. McGarvy is responsible for distribution of Crain's weekly, biweekly, and monthly publications. She serves on various periodical publication committees and is the industry co-chair for the Postal Service's Periodicals' Focus Group that serves the Great Lakes and Midwest areas. She received a degree in transportation from the College of Advanced Traffic in Chicago and her MS in administration from Central Michigan University.

MCGRANE, Michael (*Postal Service*) — Mr. McGrane is an economist with Christensen Associates, an economic research and consulting firm in Madison, Wisconsin. He testified before the Commission on periodical costs in Docket No. MC95-1. He has conducted research on mail volume estimation using the PERMIT and BRAVIS bulk mail systems, cost estimation using IOCS and CRA databases, surveys of mail piece characteristics and makeup practices, field surveys of operational practices, and labor rate forecasting. He holds a BS in economics from the University of Wisconsin-Madison and has completed additional coursework in computer science and economics.

MEREWITZ, Leonard (*Gift Fruit Shippers*) — Dr. Merewitz, a principal in LAMA Consulting, has more than 14 years of experience in postal matters. He has testified before the Commission in Docket Nos. R80-1, R84-1, and MC95-1. From 1979 to 1986, he worked for the Postal Service as a special assistant to the Senior Assistant Postmaster General for finance. From 1986 to 1993 he was former Postal Rate Commissioner John W. Crutcher's special assistant. He received a Ph.D. in economics from the University of California at Berkeley.

MILLER, Michael W. (*Postal Service*) — Mr. Miller has worked in various capacities for the Postal Service since joining it in 1991, including serving as local coordinator for automation programs in San Diego, and planning the operations for a new processing and distribution center. Presently, he is an economist in the product finance division at Postal Service Headquarters. Prior to joining the Postal Service, he was an industrial engineer at General Dynamics Space System Division. He received his MBA from San Diego State University.

MODEN, Ralph J. (*Postal Service*) — Mr. Moden has worked for the Postal Service since 1975 and is currently the manager, operations requirements, within operations support. His office is responsible for development and integration of operational and customer requirements, specifically the maintenance of the Corporate Automation Plan and Operations Models. He has appeared before the Commission on two previous occasions. He received his MBA from the University of Maryland, College Park.

MOELLER, Joseph D. (*Postal Service*) — Mr. Moeller, an economist with the Postal Service's pricing office of marketing systems, has also served in the product management and the rate studies division of the office of rates. He has presented direct and rebuttal testimony, on behalf of the Postal Service, to the Commission on several previous occasions. He received his BS in industrial management and his MS in management from Purdue University.

MULLIN, Dale A. (*PSA*) — Mr. Mullin is the director of transportation and logistics for Avon Products, Inc., where he has been employed since 1974. He received a BS from the University of Kansas and has pursued further studies in transportation and logistics at the University of Missouri, Michigan State University, and the University of North Florida.

MURPHY, Michael (*Postal Service*) — Mr. Murphy, who has worked for the Postal Service for 23 years, is manager of the office of address management at Postal Service Headquarters and the national customer center in Memphis, Tennessee. His responsibilities include providing policy and support for address management systems, providing technical guidance in address technology management, and implementing and supporting computer-based information systems. He established "Partners in Tomorrow," a representative work group of vendors and mailers who meet to establish quality and performance goals for commercial address matching programs.

MUSGRAVE, Gerald L. (*Postal Service*) — Dr. Musgrave is an economist and president of Economics America, Inc., a consulting company, in Ann Arbor, Michigan, where he develops econometric models and economic analyses. Widely published in the area of economic analysis and a consultant to the Postal Service on econometric methods and models, competition, and demand markets, he has testified before the Commission in three previous rate cases. He is also the book review editor and general associate editor

of *Business Economics.* He received his MA and Ph.D., both in economics, from Michigan State University.

NEEDHAM, Susan W. (*Postal Service*) — Ms. Needham began working for the Postal Service as a letter carrier in 1981 and is currently an economist in the pricing office at Postal Service Headquarters. This is her fourth appearance before the Commission. Previously, she was a financial analyst for SYSCON Corporation of America. She has a BA in business administration and economics from Catawba College, Salisbury, North Carolina, and is working toward her MBA at Marymount University.

NEELS, Kevin (*UPS*) — Dr. Neels is director at the management and economic consulting firm of Putman, Hayes, and Bartlett, Inc. He has provided economic analyses and consulting services addressing issues relating to product costing for more than 20 years. He holds a Ph.D. and BA, both from Cornell University.

NELSON, Michael A. (*Postal Service*) — Mr. Nelson is an independent transportation system analyst. His consulting work involves developing and applying methodologies based on operations research, microeconomics, statistics, and econometrics to solve specialized analytical problems in the field of transportation. He previously provided testimony before the Commission on behalf of United Parcel Service in Docket Nos. RM86-2B, R87-1, and R90-1. He received his bachelor's and two master's degrees from MIT, one in civil engineering and another from the Alfred P. Sloan School of Management.

NIETO, Norma B. (*Postal Service*) — Ms. Nieto is a consultant who specializes in financial and statistical analysis at Price Waterhouse, L.L.P., with an emphasis on cost systems. Her experience with the Postal Service includes cost analysis in transportation, labor, buildings, product feasibility, marketing, and capital evaluation projects. She provided technical support on TRACS and related issues in Docket Nos. R94-1 and MC95-1. She received her bachelor's degree in industrial management and economics from Carnegie-Mellon University.

O' BANNON, John H. (*OCA*) — Mr. O'Bannon is a doctoral candidate in the Department of Economics at the University of Virginia, where he received his MA in economics in 1997. His graduate studies focus on industrial organization and public policy analysis.

O'HARA, Donald J. (*Postal Service*) — Dr. O'Hara is a manager of classification and product development for the Postal Service. He provided testimony on rate and classification issues for First-Class Mail, Classification Reform II, and Nonprofit Periodicals in MC95-1 and MC96-2. Before moving to the Postal Service's reclassification project, he was a principal economist in the planning department. His work has included developing and implementing the Postal Service's Total Factor Productivity measurement system. He has taught economics at the University of

Rochester in Rochester, New York. He holds a Ph.D. in economics from the University of California at Los Angeles.

OTUTEYE, Godfred (*AISOP*) — Mr. Otuteye is executive vice president and chief operating officer of Money Mailer, Inc., a franchise network that prepares locally zoned saturation mail advertising coupon envelopes. Previously he served as the chief operating officer for DATADESK, a keyboard and input device manufacturer. He received his BA in applied mathematics from Harvard University and his MBA from the University of Southern California.

PAFFORD, Bradley V. (*Postal Service*) — Mr. Pafford has been a mathematical statistician in statistical policy and programs, finance, for the Postal Service since 1991. During that time he has worked on design issues for improving the Postal Service's statistical information systems. Previously he was employed by the Department of Agriculture, National Agricultural Statistics Services, for 11 years. He holds a BS and MS in forestry from the Virginia Polytechnic Institute and State University and received a master of statistics degree from North Carolina State University.

PANZAR, John C. (*Postal Service*) — Dr. Panzar, the Louis W. Menk Professor of Economics at Northwestern University, also holds appointments in the university's economics department and transportation center. He is an associate editor of the *Journal of Regulatory Economics* and a member of the editorial board of *Information Economics and Policy.* He has published two books and many articles on subjects relating to pricing issues of regulated enterprises. He has studied postal costing for more than a decade and has testified before the Commission beginning in 1984. Since 1990, he has participated in many international postal conferences and workshops, presenting papers and serving as an invited discussant. He received his MA and Ph.D. degrees from Stanford University.

PATELUNAS, Richard (*Postal Service*) — Mr. Patelunas, an economist with the Postal Service who has testified in five previous Commission dockets, is an expert on the roll-forward cost model. Before his assignment to Postal Service Headquarters in 1986, he held the Postal Service craft positions of city carrier, letter sorting machine operator, distribution clerk, and window clerk. Previously, he has provided testimony in Docket Nos. R90-1, MC93-1, R94-1, MC95-1, and MC96-3. He received his MBA from Syracuse University.

PETERSON, Sydney R. (*Niagara*) — Mr. Peterson is president of Niagara Telephone Company and corporate secretary of Wittenberg Telephone Company, both located in Wisconsin. He has been interested in post offices and mail practices since his high school years, and since then, he has observed and photographed numerous post offices.

PICKETT, John T. (*Postal Service*) — Mr. Pickett is an economist in the cost attribution section of product finance at Postal Service Headquarters, where he has worked since 1984. He has testified before the Commission and provided technical support to Postal Service attorneys and witnesses in numerous Commission dockets. He received his BA and MA in economics from Boston University and, while teaching at Brown University, completed all required course work toward a Ph.D. except his dissertation.

PLUNKETT, Michael K. (*Postal Service*) — Mr. Plunkett began his career with the Postal Service as a letter carrier in 1984 and was accepted into the Postal Service management intern program in 1990. He currently is an economist in the pricing office of marketing. His assignments as an intern allowed him to travel throughout the country to various offices, including headquarters and district offices in finance, human resources, operations, and marketing. He received his MBA from the Wharton School of Business at the University of Pennsylvania.

PORRAS, M. Richard (*Postal Service*) — Mr. Porras is vice president, controller, for the Postal Service. His responsibilities include the establishment, direction, control of financial management operations, and direction of the capital investment program. He represents the Postal Service in exchange programs with the Federal Republic of Germany and Japan. In October 1994, he was named chairman of the Postal Development Action Group and international committee of the Universal Postal Union. He received his MBA from the University of California at Los Angeles and has completed the Advanced Management Program at Harvard University.

PRESCOTT, Roger C. (*MOAA*) — Mr. Prescott is a vice president and an economist with L.E. Peabody & Associates, Inc. As an economic consultant, he has participated in the preparation of studies and reports for railroads, shippers, shipping associations, state governments and other public bodies dealing with transportation and related economic issues. He submitted testimony to the Commission in Docket Nos. R90-1 and MC95-1. He received his BA in economics from the University of Maine.

RASTOK, Tom (*Lab*One, *et al.*) — Mr. Rastok is the director of logistics for Lab*One*. The majority of his responsibilities involve specimen transportation. Lab*One* serves the insurance industry which accounts for the majority of their Postal Service mailings.

RIOS, Julie F.(*Postal Service*) — Ms. Rios, manager, expedited and package information services for the Postal Service, is responsible for the development, implementation, and customer support of expedited and package information-based services. She has served in various positions, including clerk, carrier, and supervisor, since joining the Postal Service in 1972. She has a BA in studio art from the University of California and has completed courses in business administration at San Diego State University.

SCHENK, Leslie M. (*Postal Service*) — Dr. Schenk is a senior economist with Christensen Associates, an economic analysis and consulting firm in Madison, Wisconsin. She has worked on many research projects for the Postal Service and presented testimony to the Commission in Docket No. MC97-1. She received her MA in economics and mathematics from Indiana University and her Ph.D. in economics from Michigan State University.

SCHICK, Joseph E. (*AMMA*) — Mr. Schick is industry vice-chair of the Mailers' Technical Advisory Committee and manager of postal affairs at Quad/Graphics Inc., in West Allis, Wisconsin. Quad is one of the largest printing and distribution companies for magazines, books, parcels, catalogs and other items related to direct mail marketing. He has over 12 years experience in postal affairs.

SCHMUTZLER, Neal W. (*LabOne, et al.*) — Mr. Schmutzler is the facilities manager at the Clinical Reference Laboratory in Lenexa, Kansas. It is his responsibility to produce the clinical specimen collection kits for clients and to distribute them, using the Postal Service or private carriers, for insurance risk assessment purposes.

SECKAR, Paul G. (*Postal Service*) — Mr. Seckar is a principal consultant with Price Waterhouse's office of government services and a member of Price Waterhouse's Center for Postal Consulting. His work concentrates on cost estimation, statistical and other special studies, and other pertinent financial and economic studies. He presented testimony in Docket No. MC96-2 in the area of Periodicals mail processing costs. He was previously employed by the Naval Center for Cost Analysis. He received his MS in statistical science from George Mason University.

SELLICK, Stephen E. (*UPS*) — Mr. Sellick is an associate at Putnam, Hayes & Bartlett, Inc., an economic and management consulting firm. He has worked on PHB's analytic investigation of Postal Service costing issues and testified before the Commission numerous times since 1990. He has a BS in economics from the University of Pennsylvania's Wharton School of Business and a master's degree in public policy studies from the University of Chicago.

SHARKEY, Thomas M. (*Postal Service*) — Mr. Sharkey, an economist in pricing, has been employed by the Postal Service since 1974. Currently, his primary duties include analysis of postal reform proposals and development of domestic rate proposals. He has worked in a variety of capacities for the Postal Service and has been involved in many rate proceedings including testifying before the Commission in Docket Nos. R84-1 and R87-1. He holds a master's degree in public administration, with concentrations in economics and public finance, from American University, and a graduate certificate in global business leadership from Georgetown University.

SHEEHAN, Robert J. (*Postal Service*) — Mr. Sheehan is the district manager of customer service and sales for the Atlanta, Georgia District of the Postal Service. He is responsible for all Postal Service operations in an area which includes nearly five million residents and covers 19,000 square miles. He started his career with the Postal Service in 1968 and has since held various management positions throughout the United States. He received his MBA from Suffolk University and has attended the Harvard University Program for Management Development.

SHERMAN, Roger (*OCA*) — Dr. Sherman is the Brown-Forman professor of economics at the University of Virginia. He received his MS and Ph.D. degrees from Carnegie-Mellon University and his MBA from Harvard University. He has published five books, including one on postal issues, and numerous articles, including 10 related to postal matters. He serves on the editorial boards of two academic journals, including *The Journal of Regulatory Economics*. He has been a consultant to the Postal Service and the Postal Rate Commission.

SHEW, William B. (*Dow Jones*) — Mr. Shew is a director of economic studies at Arthur Andersen Consulting. He is currently a visiting scholar at the American Enterprise Institute for Public Policy Research, where he conducts research on regulatory economics and is completing a study that evaluates the federal regulation of communication markets. He has worked with government agencies and private organizations, both here and abroad, on methods for improving performance in regulated industries. He was an assistant professor of economics and trade at the University of London (U.K.). He has published numerous articles and books on regulation and competition issues. He received his MA from the University of Chicago and has completed all requirements, except the dissertation, toward a Ph.D. at that institution.

SMITH, J. Edward, Jr., (*OCA*) — Dr. Smith is a consultant appearing on behalf of the Office of Consumer Advocate. Previously, he has held a variety of teaching, research, industry, and consulting positions. He received his AB in economics from Hamilton College and a Ph.D. in economics from Purdue University.

SMITH, Marc A. (*Postal Service*) — Mr. Smith is an economist in the Postal Service's cost analysis group of finance. He testified in the Commission's R90-1 and R87-1 dockets on issues of peak load and the determination of indirect costs. Formerly, he held economist positions with the Interstate Commerce Commission and the New York Department of Public Service. He received his MA in economics from the University of Michigan, where he completed all requirements toward a Ph.D. in economics, except the dissertation.

SPEIGHTS, Patsy (*NNA*) — Ms. Speights is the editor and general manager of the *Prentiss Headlight*, a weekly newspaper located in Prentiss, Mississippi, where her responsibilities cover all activities needed to produce a weekly community newspaper.

STAPERT, John (*CRPA*) — The Rev. Dr. Stapert is the executive director of the Associated Church Press. He has served as the editor and publisher of *The Church Herald*, a monthly magazine, and *Perspectives*, a theological journal. He has presented testimony before the Commission on four previous occasions. He is a member of the Postal Service's Customer Steering Group for Nonprofit Reclassification Reform and was a member of its Mailers' Technical Advisory Committee. He also brought testimony before the Commission in Docket Nos. R87-1, R90-1, R94-1, and MC95-1. He holds a M.Div. from Fuller Theological Seminary and both a MA and Ph.D. in psychology from the University of Illinois.

STEELE, Jon M.(*Postal Service*) — Mr. Steele, who joined the Postal Service in 1962, is vice president, operations, for the Northeast Area of the Postal Service. His duties include the direct management of nine performance clusters in the Northeast. Previously, he was vice president, area operations, for the Allegheny Area and worked approximately 17 years in field operations as a postmaster, MSC manager, and division manager. He received his BA from the University of Massachusetts and graduated from the Harvard Advanced Management Program.

STEIDTMANN, Carl E. (*Postal Service*) — Dr. Steidtmann is director and chief economist in the retail consulting practice at Price Waterhouse, L.L.P. His primary duties include writing, speaking, and consulting on economic, consumer, technological, and competitive trends as they relate to retailing and consumer goods distribution. His writings have been published in *Advertising Age, The Wall Street Journal, Business Week, Fortune, Forbes, Time* and in Price Waterhouse's quarterly *Retail Outlook* and monthly *Retail Economist*. Previously, he testified before the Commission in Docket No. MC96-3. He received his BA in history, MBA, and Ph.D. in economics from the University of Colorado.

STRALBERG, Halstein (*Time Warner*) — Dr. Stralberg is the manager of the operations research division at Universal Analytics, Inc., a management consulting firm in Torrance, California. His academic background is in mathematics, with a master's degree from the University of Oslo (Norway). For more than 20 years he has directed and performed postal-related studies. He has testified before the Commission since 1980. His clients have included Time Warner, Inc., McGraw-Hill, Inc., Magazine Publishers of America, and the Postal Service.

TAKIS, William M. (*Postal Service*) — Mr. Takis is a principal consultant in Price Waterhouse's finance and economic consulting practice and a member of Price Waterhouse's Center for Postal Consulting. He has been responsible for directing various cost analysis projects for the Postal Service. These projects focused on the Postal Service's mail processing, surface transportation, air transportation, and window service operations and recovery of prior year losses. He received his MA in economics

from the University of Maryland, where he is currently completing the requirements for a Ph.D. in economics.

TALMO, Daniel (*Postal Service*) — Dr. Talmo has been senior economist with Christensen Associates since 1988. He testified before the Commission on nonprofit mail characteristics in Docket No. MC96-2 and provided support for analyses presented in MC95-1. His work has included mail volume estimation using the PERMIT and BRAVIS bulk mail systems, surveys of mail piece characteristics, field surveys, budget analyses, and productivity studies. He has a Ph.D. in economics from the University of Wisconsin-Madison.

TAUFIQUE, Altaf H. (*Postal Service*) — Mr. Taufique, an economist in the Postal Service's office of pricing, appeared before the Commission as a rebuttal witness in Docket No. MC96-3. Prior to joining the Postal Service in 1994, he served as an economic analyst and director for economic analysis and forecasting for Gulf States Utilities. A graduate of Karachi University, Pakistan, he received a master's degree in economics from Central Missouri State University in Warrensburg, Missouri, and has completed course work toward a Ph.D. in economics at Southern Illinois University.

TAYMAN, William P. (*Postal Service*) — Mr. Tayman, who joined the Postal Service in 1975, is the manager, budget and financial analysis, for the Postal Service. He was appointed to this position in 1995 and is responsible for the development and administration of national operating budgets. He has sponsored testimony in Docket Nos. R87-1 and R90-1 concerning the estimation of workers' compensation and retirement costs. In 1991 he was selected to attend the Sloan Fellows Program at Stanford University, where he received a master's degree in management.

THOMPSON, Pamela A. (*OCA*) — Ms. Thompson is a postal rate and classification specialist in the Commission's Office of the Consumer Advocate. She has testified before the Commission in five other dockets. Before joining the OCA, she was employed as an assistant controller and a product planning, pricing, and financial analyst for a number of private companies, including IBM. She received her MBA from Wright State University in Dayton, Ohio.

THREADGILL, Eugene E. (*APPA*) — Mr. Threadgill is a private attorney. Since 1972, he has testified before the Commission, Congressional Committees, the Federal Energy Regulatory Commission, and courts regarding postal matters. He was the assistant general counsel for the Commission when it was created in 1970. In this capacity he supervised the preparation of Commission orders and assisted in presentations to Congressional Committees which reviewed operations of the Postal Service. He has a JD from Georgetown University and received his LLM from George Washington University. He has completed coursework at American University toward a master's degree in economics.

THRESS, Thomas E. (*Postal Service*) — Mr. Thress is vice president of RCF Inc., a Chicago, Illinois firm specializing in economic and econometric analyses. He is responsible for RCF's forecasting, econometrics, and quantitative analysis activities and was instrumental in the development of the share equation methodology used by Dr. Tolley in Docket Nos. MC95-1 and MC96-2. He holds a master's degree in economics from the University of Chicago.

TOLLEY, George S. (*Postal Service*) — Dr. Tolley is a professor of economics and former director of the Center of Urban Studies at the University of Chicago. He is the president of RCF Inc., a Chicago, Illinois, firm specializing in economic and econometric analyses for policy uses. He is co-editor of the professional journal *Resource and Energy Economics* and has published 16 books and 40 articles. He has also served in many top US government positions, from which he has advised Cabinet and White House officials on economic policy issues. He also has been a consultant on economic policy for a variety of foreign countries, including Australia, where he served as a consultant to the Australia Post on mail volume forecast methodology. He has testified as the volume witness for the Postal Service in five previous Commission rate cases. He received his MA and Ph.D. in economics from the University of Chicago.

TREWORGY, David E. (*Postal Service*) — Mr. Treworgy is a principal consultant in the management consulting services division of Price Waterhouse, L.L.P. As a consultant to the Postal Service, he has worked on projects involving financial analysis, product profitability analysis, marketing strategy, and program evaluation. He provided technical support to Postal Service witnesses who testified in the Commission's R90-1 and R94-1 dockets and testified himself on behalf of the Postal Service in MC95-1. He received his MBA degree from the Graduate School of Business Administration at Harvard University.

WADE, Stephen H. (*Postal Service*) — Dr. Wade is a contractor to the Postal Service employed by IPFC Incorporated. Previously, he was employed by the Postal Service, from 1984 to 1993 as a principal economist and a supervisory economist. He received his Ph.D. in economics from the University of Arizona.

WENDLER, Guy (*ABP*) — Mr. Wendler is president of Stamats Communications in Cedar Rapids, Iowa. Stamats provides research, consulting, and marketing communications services to institutions of higher learning and produces special interest video programming for public television.

WILLETTE, W. Gail (*OCA*) — Ms. Willette is the director of the Commission's Office of the Consumer Advocate. An economist with a master's degree from the University of Rhode Island, she has testified on numerous occasions, beginning with Docket No. R80-1, on subjects as diverse as peak-load costing methodologies, costs avoided by prebarcoded flat mail, and the parcel delivery market. In 1994 she co-authored a paper on postal

economics, which was presented at the Workshop in Postal and Delivery Economics in Hakone, Japan.

YING, John S. (*Postal Service*) — Dr. Ying is associate professor of economics at the University of Delaware, where he has taught since 1987. His principal areas of teaching and research are industrial organization, regulatory economics, and microeconomic theory. He has published scholarly articles on these subjects in *The RAND Journal of Economics, The Journal of Business & Economic Statistics*, and *The Review of Economics and Statistics*. He received his MA and Ph.D. in economics from the University of California, Berkley.

YOUNG, James D. (*Postal Service*) — Mr. Young, who began working for the Postal Service in 1970 as a distribution clerk, is currently a manager in national mail transportation purchasing where he is responsible for the purchasing and contract management of transportation services, including air, rail, and highway. Throughout his career at the Postal Service, he has held various staff and management positions in mail processing, transportation operations, and purchasing and materials.

ZWEIG, Steve (*PSA*) — Mr. Zwieg is the manager of Parcel/Direct, a subdivision of Quad/Graphics. He previously held the position of director of mailing services with responsibilities that included operations, sales and marketing, and postal committees.

Revenue Requirement for Test Year with
Proposed Revenues and Costs
($000)

	USPS 1/	USPS Adj. 2/	PRC
Mail and Special Services Revenue	61,529,977	61,579,640	60,776,096
Appropriations	67,498	67,498	67,498
Investment Income	54,371	54,371	47,762
Total Revenues & Operating Receipts	61,651,846	61,701,509	60,891,356
Postmasters	1,712,615	1,712,782	1,709,828
Supervisors	3,517,945	3,519,055	3,419,756
Clerks & Mailhandlers, CAG A-J	17,759,605	17,716,537	17,508,314
Clerks, CAG K	10,073	10,071	9,957
City Delivery Carriers, In-Office	3,559,091	3,559,826	3,528,955
City Delivery Carriers, Street Time	8,401,441	8,401,831	8,336,374
Vehicle Service Drivers	448,972	449,322	443,973
Special Delivery Messengers	114,111	114,484	110,323
Rural Carriers	3,721,604	3,730,414	3,709,843
Custodial Maintenance Service	2,315,717	2,320,915	2,312,219
Motor Vehicle Service	647,994	651,979	648,435
Miscellaneous Operating Costs	291,625	291,656	290,545
Transportation	4,326,522	4,331,224	4,289,136
Building Occupancy	1,540,685	1,540,684	1,539,226
Supplies & Services	3,531,395	3,531,599	3,541,693
Research & Development	57,201	57,201	57,201
Administration & Regional Operations	4,595,701	4,595,701	4,562,519
General Management Systems	38,973	38,972	38,855
Depreciation & Servicewide Costs	4,098,851	4,098,837	4,017,843
Final Adjustments	(126,488)	(126,638)	(179,357)
Total Accrued Costs	60,563,633	60,546,452	59,895,638
Contingency (1%)	605,636	605,465	598,956
Recovery of Prior Years Losses	446,932	446,932	377,063
Total Revenue Requirement	61,616,202	61,598,849	60,871,657
Net Surplus (Deficiency)	35,644	102,660	19,699

/1 Revenues and RPYL: USPS Exh. 11A, revised 8/22/97
Accrued Costs: USPS Exhibit 15H
Final Adjustments and Contingency: USPS Exhibit 15I, revised 8/22/97

2/ Derived from PRC replication of USPS revenues and costs based on corrections to USPS cost roll forward and volume estimation models. See Appendix D at 2-5.

Effect on Net Income of Commission Adjustments to USPS Case

($ in 000)

Revisions and acknowledged corrections			$ 67,016
Attribution Adjustments:			
PRC mail processing	$ (63,050)		
Std A migration	$ 53,266		
Mail processing total		$ (9,784)	
PRC city carrier		$ (15,730)	
PRC air network transportation		$ (2,141)	
PRC special delivery messengers		$ -	
PRC specific fixed		$ -	
Total attribution adjustments			$ (27,655)
Revenue Requirement Adjustments:			
Porras rebuttal "known and certain" costs		$ 511,097	
RPYL update for FY 1997		$ 69,869	
Supervisors cost reduction program		$ 101,294	
Total revenue requirement adjustments			$ 682,260
Miscellaneous Adjustments			
Std A reclassification		$ 61,941	
CEM education		$ (33,000)	
Misidentified Std A Nonprofit mail (1%)		$ -	
Within County base year volume		$ (5,361)	
Total miscellaneous adjustments			$ 23,580
Total Adjustments			$ 745,201
USPS Original Net Income			$ 35,641
PRC Net Income at Postal Service Rates			$ 780,842
PRC Recommended Rate Changes			$ (761,142)
PRC Net Income			$ 19,700

DEVELOPMENT OF REVENUE REQUIREMENT AND COST ROLLFORWARD ADJUSTMENTS

Introduction. The purpose of this appendix is to explain the various adjustments made by the Commission to the Postal Service's test year revenue requirement estimate. The Commission took account of two general types of changes: (1) correction of errors; and (2) adjustment of the Postal Service's estimates for known and certain events occurring after the initial filing of this docket on July 10, 1997.

Since the initial filing in July 1997, there have been several significant events which have materially affected the estimates of test year accrued costs. These events were: (1) lower than anticipated inflation affected both personnel compensation and nonpersonnel cost levels; (2) rates for various benefit programs were lower than originally expected; (3) FY 1997 financial results were much better than estimated resulting in a smaller prior year loss recovery, less borrowing, and lower interest expenses; (4) assumption of the liability of Post Office Department workers compensation costs as required by P.L. 105-33; and (5) higher depreciation expenses due to compliance with Financial Accounting Standards Board (FASB) Statement No. 121. Postal Service rebuttal witness Porras presented these adjustments to the Service's revenue requirement. *See* Tr. 35/18582-84.

Additionally, the Commission made adjustments to the cost rollforward to correct Postal Service errors in the rollforward process and to implement Commission cost attribution methodologies. Corrections were also made to the Postal Service volume estimation models which had an effect on the estimate of accrued costs.

The Commission's revenue requirement adjustments were implemented using the Postal Service revenue requirement models filed as USPS LR H-12 as adjusted by USPS LR H-343. Implementation of the Commission's cost attribution methodologies, corrections to the Postal Service rollforward, and implementations of the Commission's

revenue requirement adjustments were made using the Commission's cost rollforward model, PRC LR-19.

1. Corrections to USPS Volumes, Revenues, and Costs

The Postal Service's original filing in this docket estimated test year after rates revenues of $61.646 billion, a total revenue requirement of $61.604 billion, and a net surplus of $42 million. USPS Exhibit 9A. Volumes were estimated to be 194.387 billion pieces of mail. USPS Exhibit 9C. Subsequently, the Postal Service revised the original test year after rates estimates of revenues and costs. The last revision estimated revenues of $61.616 billion, total revenue requirement of $61.652 billion, and a net surplus of $35.6 million. USPS Exhibit 9A, revised August 22, 1997. However, no revisions were made to the original volume estimate.

a. Corrections of USPS Volume Estimates

As the Commission reviewed the Postal Service estimation models for volumes and costs, several errors were detected. In response to several Presiding Officer Information Requests, the Postal Service provided the necessary information to update and correct the original and Postal Service revised estimates for volumes and costs. A discussion of the changes made to the volume estimation models can be found at Appendix H at 2-3. Correcting for the estimated volumes had the effect of changing the estimated revenues for the test year at the Postal Service's proposed rates. Using the Commission corrected volumes, with the Postal Service test year after rates proposed average revenue, increases total estimated revenues $49.7 million. The calculation of the corrected revenues can be found in PRC LR-18.

The volume corrections also affected the estimated test year after rate costs. Substituting the corrected volumes in the cost rollforward model increased costs $20.3 million.

b. Corrections of USPS Errors in the Rollforward Process

As the Commission attempted to replicate the Postal Service cost rollforward process several errors were detected. Two of the errors were significant in terms of costs attributed to classes and services of mail and the test year accrued costs.

USPS witness Patelunas describes the process by which the cost reductions and other programs information from LR H-12 are used to distribute the cost reductions programs for cost segment 3, clerks and mailhandlers. Appendix A of his testimony shows the workhour changes for each individual cost reduction program and the distribution keys and variability percentages used in the cost rollforward model to distribute the cost reductions to classes and services of mail. An examination of the table at page 6 of Appendix A shows a reduction in hours for mailhandlers due to the Integrated Mail Handling System (IMHS) cost reduction program but no cost reduction dollars associated with this program. Additionally, a distribution key and variability factor were also missing. An examination of the VBL cost factor files in Postal Service LR H-4 also shows that a cost reduction for this program was not included in the Postal Service cost rollforward. In response to Presiding Officer Information Request No. 12, question 7 (Tr. 31/16466-70), witness Patelunas indicated that exclusion of the IMHS cost reduction was an oversight. He provided the distribution key and variability factor applicable to this program and provided revised tables including the program. The Commission has also included this program in the cost rollforward model.

Witness Patelunas, in response to an interrogatory from UPS, noted that a cost change related to the Priority Mail processing center was not distributed to the classes of mail correctly. Tr. 13/7293. He noted that in the original filing the cost change of $100 million was distributed on the accumulated domestic air transportation distribution. Witness Patelunas indicated that the entire $100 million cost of the program should have been distributed directly to Priority Mail. The Commission's rollforward model includes this correction.

Postal Service LR H-126 describes and calculates an adjustment to FY 1997 volume variable mail processing labor costs for First-Class and Standard A categories to reflect

the post reclassification environment and changes in the volume mix stemming from reclassification. Witness Patelunas incorporates these adjustments into the rollforward as a cost reduction. The Postal Service revised the adjustment subsequent to the filing, which reduced the amount of the adjustment shown in the Postal Service's rollforward. A more detailed explanation of corrections made to the reclassification adjustment is found in section 3.f. below.

The Commission has corrected three other minor omissions to the Postal Service cost rollforward which amount to minimal changes to accrued costs and the distribution of attributable costs to the classes and services of mail. These corrections are:

- Addition of the nonvolume workload cost factor to cost segment 10 rural carriers, other routes, as per Postal Service response to Presiding Officer Information Request No. 12, question 2. Tr. 31/16465
- Correction of the treatment of cost segment 12 and 13 indirect costs in the rollforward process per response to Presiding Officer Information Request No. 3, question 35. Tr. 13/7278
- Addition of the PESSA cost distribution key OCR (USPS comp. 913/PRC comp. 2115) as receiving a mail volume effect in the cost rollforward. *Id.* at 7299

In summary, Appendix C presents a comparison of the summary of Postal Service finances as originally filed and as amended for volume and cost rollforward corrections. The volume corrections increase test year revenues at Postal Service proposed rates by $49.7 million and also increase the estimated test year revenue requirement by $20.3 million. Corrections to the cost rollforward process will decrease the revenue requirement $37.6 million. This results in a net increase in the estimated surplus from Postal Service proposed rates of $67 million, to an adjusted $102.7 million.

2. Adjustments to USPS Compensation and Benefits

The Postal Service's estimates for employee compensation and benefits are influenced by: (1) assumptions regarding the results of labor negotiations or arbitrated settlements, (2) increases in the consumer price index, (3) management decisions regarding wage changes for nonbargaining employees, and (4) changes in the cost or

structure of employee benefits. As noted above lower than estimated inflation and lower rates for employee benefits directly affected compensation and benefits costs for the test year. As in prior cases, the methodology utilized by the Commission to calculate the unit labor cost changes and labor-related cost changes is the same as that employed by the Postal Service. PRC LR-17 contains comparable tables and unit cost schedules to those shown in USPS LR H-12 and USPS LR H-343.

a. Adjustments Due to CPI-W Actual Results

The Postal Service uses estimates of the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), based on the Data Resources, Inc. (DRI) Trendlog. The estimates for the July 1997 and January 1998 CPI-W were 472.06 and 477.49, respectively. Subsequent to the filing of this docket, the actual CPI-W indices for these two periods were released by the Department of Labor. The actual indices were lower than the estimates used by the Postal Service; 469.0 and 472.0 respectively. The following table compares the actual CPI indices and the COLA payments made, with those estimated by the Postal Service for the period of the base year through the test year.

Table D-1
Cumulative COLA Data FY 1996 - FY 1998

	CPI - W		Cents per Hour		Cost per Workyear	
	Actual	USPS Est.	Actual	USPS Est.	Actual	USPS Est.
January 1996	451.90	451.90	$0.05	$0.05	$104.00	$104.00
July 1996	459.70	459.70	$0.25	$0.25	$520.00	$520.00
January 1997	465.70	465.70	$0.40	$0.40	$832.00	$832.00
July 1997	469.00	472.06	$0.48	$0.56	$998.00	$1,165.00
January 1998	472.00	477.49	$0.56	$0.69	$1,165.00	$1,435.00
July 1998 est.	479.01	484.58	$0.73	$0.87	$1,518.00	$1,810.00

The last estimated COLA, based on the July 1998 CPI-W index was recalculated in order to maintain the same rate of inflation between the January 1998 index and the July 1998 index the Postal Service estimated in its original filing. This resulted in a slightly lower estimated COLA increment than originally projected by the Postal Service. As can be seen from the table above, the Postal Service overstated COLA by $292 per workyear. The effect of correcting for this overstatement is to reduce test year accrued costs by $153.5 million. Labor related expenses for repriced annual leave ($3.9 million), Civil Service Unfunded Liability principle and interest ($19.3 million), premium roll-up costs ($25.4 million), and benefit roll-up costs ($30.3 million) are also reduced.

b. Health Benefits

The Postal Service estimated that the increase in health benefits premiums for the test year would be 5.0 percent. This estimate was provided by the Office of Personnel Management. Postal Service rebuttal witness Porras testified that the actual increase in average premiums per active employee was 3.72 percent. This increase was based on a Postal Service report reflecting the actual cost of premiums and the number of employees covered by the health benefits program both before and after the annual open season. Tr. 35/18583. Applying the lower health benefits increase reduces test year costs $23.1 million.

Annuitant health benefits costs also did not increase as much as originally estimated by the Postal Service. The Postal Service originally estimated that annuitant health benefits would increase 5.0 percent. Witness Porras noted that the actual increase was 4.6 percent. *Id.* at 18582. Applying the actual increase to these costs reduces annuitant health benefits expenses by $1.7 million.

c. FERS Employer Contribution Rate

The Postal Service contributes an amount calculated on the percentage of FERS employees basic payroll costs for the basic benefits of FERS. This rate is set by the

Office of Personnel Management (OPM). At the time of the filing the rate being paid by the Postal Service equaled 11.4 percent of FERS basic payroll costs. Subsequently, OPM reduced the rate to 10.7 percent effective October 1, 1997, the beginning of the test year. *Ibid.* This change reduces test year costs by $102.4 million.

d. CSRS Annuitant COLA

The Postal Service estimates the increase in annuitant COLA costs based on the total annuitant population reflected in the most recent OPM billing, demographic rates provided by OPM, and forecasted increases in the calendar year third quarter CPI-W.

As noted above, the actual increases in the CPI-W were less than what the Postal Service originally forecasted. When the actual increases in the CPI-W are used the CSRS annuitant COLA costs decrease $27.2 million. *Id.* at 18583.

e. Workyear Mix Adjustment

The Postal Service uses a workyear mix model to calculate the impact of projected changes in the mix of career bargaining, transitional, and casual employees, and overtime usage for the estimated years beyond the base year. The decreased COLA affects the Postal Service's workyear mix adjustment estimate and increases the test year after rates adjustment $0.8 million.

f. Adjustments to Cost Reductions and Other Programs Cost Effect

The Postal Service has numerous programs and projects designed to produce cost savings in the interim year and the test year. Savings to the Postal Service from these programs are estimated to be approximately $1.7 billion. Many of the cost reduction programs are estimates of workhour savings from implementation of the programs. The associated cost savings are derived from the estimated average compensation and benefit rate of the affected employee crafts. The effect of the Commission's adjustments

to compensation and benefits is to decrease the dollar amount of the cost reductions by approximately $7.8 million.

The Postal Service categorizes changes in costs not associated with cost reduction programs and changes in expenses not directly linked to operations as other programs. The other programs cost effect also accounts for additional expenses incurred during the startup phase of some of the cost reduction initiatives of Postal Service management. These are affected also by the Commission's adjustments to compensation and benefits. The effect is to reduce the other programs costs by $3.9 million.

g. Summary

The Commission's adjustments to compensation and benefit cost estimates through the test year reduce the Postal Service's estimated compensation and benefits and other personnel related test year expenses by approximately $382.1 million. The following table summarizes the Commission's adjustments to compensation and benefits cost level, cost reductions, and other programs cost effects for FY 1997 and the test year.

Table D-2
Summary of PRC Adjustments to
Personnel Compensation and Benefits Estimates

	FY 1997	Test Year
	(millions)	
Compensation & Benefits Cost Level	$(12.2)	$(322.2)
Cost Reductions	$0.3	$7.5
Other Programs	$(16.1)	$(40.0)
Workyear Mix Adjustment	N/A	$0.8

3. Other Revenue Requirement Adjustments

a. Nonpersonnel Cost Level

In additional to personnel-related cost levels, the Postal Service uses estimates of inflation for nonpersonnel costs such as transportation, rents, fuel, utilities and various other costs. Similar to personnel cost levels, the Postal Service uses DRI, Inc. estimates of price indices for various groupings of products and services. For example, cost level increases for utilities in cost segment 15 are based on an inflation index for electricity, and increases in carfare and driveout in segment 13 are based on an index of public transportation.

Postal Service rebuttal witness Porras provided actual FY 1997 nonpersonnel cost level indices to update the original estimates. Tr. 35/18583. Substituting actual FY 1997 inflation indices for the original estimates reduces transportation costs $59.7 million in the test year. All other nonpersonnel costs increase $6.1 million when the actual inflation indices are substituted.

b. Interest Expense

The Postal Service estimate of interest expense for the test year is predicated on the assumption of an anticipated long-term debt balance at the end of FY 1997 of $7.6 billion. USPS LR H-12 at 134. In response to OCA interrogatory 104, the Postal Service confirmed that the actual long-term debt ending balance was approximately $5.9 billion, a reduction of over $1.7 billion from the original estimate. Tr. 19C/9196. Postal Service rebuttal witness Porras also noted that interest expense would be less in the test year by $116.3 million as a result of less borrowing than estimated in FY 1997. Tr. 35/18583. He also noted that less interest expense was capitalized during FY 1997, partially offsetting the decreased interest expense. *Ibid.*

Utilizing the note interest expense computation schedules for the test year provided in response to OCA interrogatory 106 the Commission has reduced the test year interest expense estimate by $116.3 million. Tr. 19C/9201-04. Additionally, the Commission

has adopted the revised interest capitalization worksheet provided by witness Porras and decreased the capitalized interest by $29.4 million. Tr. 35/18595.

c. POD Workers Compensation Liability

Pursuant to recently enacted legislation, Public Law 105-33, the Postal Service assumed the liability of workers compensation costs for the Post Office Department. Postal Service witness Porras indicates that assuming this liability will increase test year costs by $14.3 million. Tr. 35/18584. The Commission has adopted this adjustment and includes these costs in the test year revenue requirement.

d. Depreciation Expense

Witness Porras states that the Postal Service has been required to comply with the requirements of Financial Accounting Standards Board (FASB) Statement 121. This statement requires that impaired buildings be revalued to the lower of a building's fair market value or undepreciated balance. He notes that estimated test year depreciation expense will increase by $15 million. The Commission includes this increase in the test year revenue requirement.

e. DMA Adjustment to Supervisor Cost Reductions

Direct Marketing Association (DMA) witness Buc proposed a reduction of $51 million for supervisors costs for mail processing and city delivery carriers. The Commission agrees with witness Buc that the supervisor to craft cost ratio should remain constant within the rollforward process. *See* PRC Op. R94-1, para. 2146-51.

Schedule D-1 shows the calculation of the cost adjustment. The Commission's calculation is basically the same as that of witness Buc. Tr. 28/15364. The cost changes for the six cost rollforward effects are shown from the rollforward model and a ratio of the costs of supervisors to the craft supervised is calculated after each rollforward effect. The adjustment is calculated by first deriving the difference of the ending

rollforward supervisor ratio and the supervisor ratio before the cost reductions program cost effect. That difference is then multiplied by the ending rollforward cost of the craft supervised.

The adjustment reduces FY 1997 supervisor costs $48.6 million and test year supervisor costs $50.6 million.

f. Standard A Reclassification Volume Mix Adjustment

The Postal Service provides a reclassification volume mix adjustment to reflect the effects of reclassification between FY 1996 and the base year 1997. In the Postal Service's proposal there is a large discrepancy between the actual change in unit revenue and the estimated change in unit cost due to reclassification, particularly in Standard A nonprofit letter mail. The revenue per piece for Standard A nonprofit bulk rate other in 1996 was 11.7 cents. In the second quarter of 1997, the first full quarter to reflect reclassification, the revenue per piece was 11.0 cents, a difference of .7 cents. The Service shows a post reclassification unit cost difference of only .1 cents. USPS LR H-126 at II-9.

The MC96-2 case, where the Service proposed and the Commission accepted discounts based on the reclassification of Sandard A nonprofit, the Service presumed that unit cost would mirror unit revenue. In the current docket no actual unit cost data representative of the post reclassification environment is presented. Instead the Service makes an adjustment that purportedly lowers the unit cost to the post-reclassification level. With revenue per piece decreasing .7 cents and unit cost decreasing a mere .1 cents, the Postal Service's adjustment appears understated.

In addition, numerous other factors render this adjustment suspect. As originally presented, there was an inconsistency between the amounts of this adjustment shown in LR H-126 and cost rollforward witness Patelunas' Workpaper B. POIR No. 14 addressed this inconsistency and the Service responded that the volume mix adjustment shown in LR H-126 was the proper and correct cost adjustment. Tr. 31/16513. However in response to POIR No. 14, the Service also made additional corrections to LR H-126

which subsequently changed the original adjustment. Also, the original library reference was missing whole sections related to bundle sorting costs and the electronic version contained numerous links to hidden data and nonexistent files. Further, when the Service was compelled to respond to OCA Interrogatory OCA/USPS-71, no adjustments were made to LR H-126 although reasonably called for by the change in mail processing methodology.

Given the implausible discrepancy in unit revenue and unit cost following reclassification, and the record confusion surrounding the Service's adjustment, the Commission modifies the reclassification adjustment for Standard A mail.

The Commission's correction to the Service's mail mix adjustment for Standard A mail is calculated by a fixed weight index type approach. This calculation first computes a post reclassification unit cost by shape for Standard A regular rate, regular rate enhanced carrier route, nonprofit and nonprofit enhanced carrier route in the same manner as the Postal Service's LR H-126 adjustment. These unit costs by shape are than applied to the FY 1996 volumes and the first quarter FY 1997 volumes to obtain weighted unit costs which reflect the mail mix differences between the pre- and post-classification environments. The difference between the two weighted ;unit costs is then escalated to 1997 cost levels and multiplied by FY 1997 volumes to obtain the total adjustment. Due to the incompatibility between pre- and post-classification data, this method could not be done for First-Class Mail. Instead, the Postal Service's LR H-126 method was used for First-Class.

The calculation is detailed in PRC LR-9, Part II. This adjustment affects both commercial and nonprofit Standard A subclasses and reduces test year accrued costs by $61.9 million.

g. Effects of Commission Volume Adjustments

Postal Service witness Patelunas' Exhibit 15A develops the mail volume factors used in the rollforward process to estimate the cost changes due to the changes in mail volumes from the base year to FY 1997 before rates and from FY 1997 before rates to

the test year before rates and the test year after rates. The base year volumes are from the FY 1996 Revenue, Pieces, and Weight report. The volumes for FY 1997 and the test year before rates are from Postal Service Exhibit 6A. The test year after rates volumes are from USPS-T-6, Table 1. Tr. 13/7275.

The Commission has adjusted the base year, FY 1997, and test year before rates volumes used in the rollforward for Periodicals Within County, Stamped Envelopes, Special Handling, and Post Office Boxes from what was used by the Postal Service as shown in witness Patelunas Exhibit 15A.

Base year volume of the Periodicals Within County subclass was calculated as a simple average of Within County volumes from the Revenue, Pieces, and Weight reports for Fiscal Years 1994, 1995, 1996, and 1997. The forecasting process used to estimate for FY 1997, the test year before rates, and the test year after rates volumes remains the same as before. This adjustment to the Periodicals Within County Subclass base year volumes is discussed more fully at Chapter V, Section E of the Opinion and Recommended Decision.

The adjustments for the special service volumes used in the rollforward process were made to more closely align these volumes with the volumes used by the witnesses sponsoring the proposed fees. In the Postal Service cost rollforward model, witness Patelunas uses a base year post office box volume of 17,212 boxes, a FY 97 volume of 18,110, a test year before rates volume of 17,661, and an after rates volume of 15,100 (post office box volumes in millions). Postal Service Exhibit 15A. These volumes contradict the volumes used by witness Lion in USPS-T-24.

The Commission has corrected this apparent discrepancy in the following manner. USPS test year before rates volumes of 15,712[1] from USPS-T-24 were adjusted by the percentage difference between 17,661 and 18,110 (2.5%) to estimate a FY 97 volume of 16,111 boxes. This FY 97 volume was then adjusted by the percentage difference

[1] Consistent with the Commission's Decision in MC96-3, the number of boxes includes caller service but excludes reserve number.

between 18,110 and 17,212 (5.2%) to produce a base year revised volume of 15,312 boxes.

Similarly, Postal Service Exhibit 15A shows the volumes of special handling for the base year of 68,175, FY 1997 of 68,175, test year before rates of 71,922, and the test year after rates of 71,922. Stamped envelopes volumes are 536,861 for the base year, 460,000 for FY 1997, 452,000 for the test year before rates, and 452,000 for the test year after rates.

In response to Presiding Officer Information Request No. 5, question 4, witness Needham revised the base year volumes used to calculate the before rates and after rates revenues for stamped envelopes. She also corrected errors found in the original workpapers for stamped envelopes. Tr. 19E/9949-51. The Commission adjusted the volumes used in the rollforward model to coincide with the corrections provided by witness Needham. Base year volumes were adjusted from 536,861 to 467,705 and the test year volumes were adjusted from 452,000 to 460,000.

Also in response to Presiding Officer Information Request No. 5, question 7, witness Needham corrected the special handling volumes. *Id.* at 9955-56. Adopting these corrections the Commission has changed the base year volumes from 68,175 to 67,077, FY 1997 volumes from 68,175 to 71,424, the test year before rates volumes from 71,922 to 74,613, and the test year after rates volumes from 71,922 to 68,858.

Substituting the aforementioned volumes for the volumes used in the Postal Service's cost rollforward increases the revenue requirement $9.8 million.

4. Commission Test Year After Rates Final Adjustments

a. Standard A Migration Final Adjustment

Commission changes in cost attribution for cost segment 3 mail processing affect the final cost adjustment for the migration of volumes from Standard A Enhanced Carrier Route to Standard A Other subclass. The resultant increase in unit costs for these

subclasses of mail due to the Commission's attribution changes increases the adjustment and reduces the accrued cost for the test year $53.3 million.

b. Transportation Rollforward Volume Effect Final Adjustment

Commission changes to the treatment of the fixed portion of domestic air transportation network costs attributed these costs to Priority Mail and Express Mail. These fixed costs are treated as volume variable costs in the Commission cost rollforward model, i.e., these costs receive a full mail volume cost effect in the rollforward process. In order to reflect the proper treatment of these costs as fixed attributable costs, an estimate of the rollforward volume effect is made and subtracted from the test year costs of Priority Mail and Express Mail. Schedule D-2 shows the derivation of the adjustment. The final adjustment reduces test year Priority Mail costs by $11.5 million and reduces test year Express Mail costs by $4.8 million, thereby reducing total test year accrued costs by $16.3 million.

c. Standard A Nonprofit Cost Final Adjustment

The Commission has adjusted the attributable costs of the Standard A Nonprofit subclass in response to ANM witness Haldi's testimony regarding the misidentification of Standard A Nonprofit mail pieces in the Postal Service's cost systems. This issue is discussed further at Chapter V.C. in the Opinion and Recommended Decision.

The final adjustment implemented transfers one percent of the attributable costs before contingency from Standard A Nonprofit Enhanced Carrier Route and Nonprofit Other to the corresponding bulk commercial subclasses of Standard A. Under the Commission's recommended rates and attributable cost methodology $1.4 million is transferred from Nonprofit Enhanced Carrier Route to Commercial Enhanced Carrier Route and $12.0 million is transferred from Nonprofit Other to Commercial Other.

d. First-Class Single Piece Maximum Weight Cost Adjustment

The Commission is accepting the proposal of Nashua, District Photo, et.al. witness Haldi to increase the maximum allowable weight of single piece First-Class mail from eleven ounces to thirteen ounces. Opinion and Recommended Decision at Chapter V, Section B. This proposal will transfer volumes, revenues, and costs from Priority Mail to single piece First-Class. The costs of the migrating volumes are developed in PRC LR-12 and amount to $190 million.

e. CEM Education Cost Adjustment

The Commission, as discussed at Chapter V, Section B, is establishing a shell classification for Courtesy Envelope Mail (CEM). Postal Service rebuttal witness Miller noted that the Postal Service would incur additional costs in order to educate the mailing public about CEM. This would entail a multi-media advertising campaign which would include radio, television, and newspaper advertisements, a CEM specific direct mail campaign, and a CEM specific brochure. In total this education campaign would cost the Postal Service approximately $33 million. Accordingly, the Commission has added $33 million to single piece First-Class Mail for public education costs as a final adjustment.

5. Cost Rollforward Model Adjustments

The Commission uses the rollforward methodologies from the most recent case in which the cost rollforward model was used, Docket No. MC96-3, in all but one respect. The Commission has adopted the Postal Service's rollforward treatment of cost segment 3, Administrative Clerks. In Docket No. R94-1 and Docket No. MC96-3, the Commission rollforward methodology gave the components of administrative clerks a cost redistribution mail volume effect. This treatment of administrative clerks resulted from a Postal Service response to a Presiding Officer Information Request in Docket

No. R94-1.[2] However, in Docket No. MC96-3, the Postal Service's cost rollforward applied a direct mail volume effect to the administrative clerks components. Absent any reason to change from the established Docket No. R94-1 methodology, the Commission continued to apply a cost redistribution mail volume effect to administrative clerks.[3] It is apparent after reviewing the history of the rollforward treatment of administrative clerks that the Postal Service's methodology of applying a direct mail volume effect on the components of administrative clerks is the proper treatment. The Commission's rollforward methodology now applies a direct mail volume effect to the components of cost segment 3 administrative clerks.

a. Commission Attributable Cost and Revenue Requirement Changes

For the purpose of developing the Commission's test year attributable costs and revenue requirement, changes were made to the rollforward factor files and the base year cost matrix. These changes implemented the following Commission adjustments to costs and volumes:

- Adjustments to FY 1997 and the test year cost level factors, cost reductions programs, other programs, and the workyear mix adjustment.
- Corrections to USPS rollforward for errors, discussed above.
- Attribution changes in cost segments 3, 7, 9, and 14. Also adjustment of the base year for the inclusion of specific fixed costs in cost segments 3, 16, and 18.
- Adjustment of base year, FY 1997, test year before rates, and test year after rates volumes.

The adjusted cost level factors, cost reductions programs, and other programs factors noted in item 1 are shown in the factor files *fy97p.fac, fy97volp.fac, fy97mixp.fac, tyar98p.fac, ar98mixp.fac*. Corrections to the Postal Service rollforward were either keypunched directly into the Commission's manual input cost matrix or the appropriate factor files were edited. The direct cost component and distribution key adjustments

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[2] *See* PRC Op. R94-1, Appendix B at 9.

[3] PRC Op. MC96-3 at 40.

noted in item 3 were calculated and keypunched directly into the Commission's manual input cost matrix or taken into account in the rollforward factor files; the indirect cost changes resulting from these changes were calculated using the "byrip" option of the cost model program. Volume changes for the base year were keypunched directly into the manual input cost matrix. Volume corrections for FY 1997 and the test year before rates, as well as the volumes resulting from the Commission's proposed rates were entered into the base year cost matrix via the cost model program **putvol**. The Commission's final adjustments were computed separately and applied to the attributable and accrued costs.

b. Summary

The Commission has made adjustment to Postal Service costs which reduce the total test year after rates accrued costs by $684.6 million and increase test year attributable costs by $4,648.7 million.

Schedule D - 1
Calculation of DMA/Buc Adjustment

	Mail Processing		Cost	City Carriers		Cost	City Carriers		Cost
	Clks. & MH	Superv.	Ratio	In-Office	Superv.	Ratio	Street	Superv.	Ratio
Base Year (FY 1996) Costs	12,470,456	1,018,294	8.1657%	3,710,131	222,225	5.9897%	7,751,334	464,313	5.9901%
Cost Level	370,821	1,037		112,327	226		234,680	473	
Sub-Total	12,841,277	1,019,331	7.9379%	3,822,458	222,451	5.8196%	7,986,014	464,786	5.8200%
Mail Volume	356,904	28,331		107,251	6,242		80,733	4,698	
Sub-Total	13,198,181	1,047,662	7.9379%	3,929,709	228,693	5.8196%	8,066,747	469,484	5.8200%
Non-Volume Workload	-	-		-	-		48,489	2,823	
Sub-Total	13,198,181	1,047,662	7.9379%	3,929,709	228,693	5.8196%	8,115,236	472,307	5.8200%
Additional Workday	(185)	(15)		(171)	(10)		(2,189)	(127)	
Sub-Total	13,197,996	1,047,647	7.9379%	3,929,538	228,683	5.8196%	8,113,047	472,180	5.8200%
Cost Reductions	(589,586)	(161)		(201,466)	(35)		-	(73)	
Sub-Total	12,608,410	1,047,486	8.3078%	3,728,072	228,648	6.1331%	8,113,047	472,107	5.8191%
Other Programs	339,571	10,794		3,712	2,356		8,091	4,865	
Total Costs	12,947,981	1,058,280	8.1733%	3,731,784	231,004	6.1902%	8,121,138	476,972	5.8732%
Supervisor Cost Reduction		(30,479)			(13,829)			(4,321)	

Schedule D - 1
Calculation of DMA/Buc Adjustment
(continued)

	Before Rates Mail Processing Clks. & MH	Superv.	Cost Ratio	City Carriers In-Office	Superv.	Cost Ratio	City Carriers Street	Superv.	Cost Ratio
FY 1997 Costs	12,947,981	1,027,801	7.9379%	3,731,784	217,175	5.8196%	8,121,138	472,651	5.8200%
Cost Level	192,048	20,924		57,599	4,612		125,350	9,524	
Sub-Total	13,140,029	1,048,725	7.9811%	3,789,383	221,787	5.8528%	8,246,488	482,175	5.8470%
Mail Volume	273,991	22,080		83,642	5,222		64,892	3,775	
Sub-Total	13,414,020	1,070,805	7.9827%	3,873,025	227,009	5.8613%	8,311,380	485,950	5.8468%
Non-Volume Workload	-	-		-	5,222		49,707	2,891	
Sub-Total	13,414,020	1,070,805	7.9827%	3,873,025	232,231	5.9961%	8,361,087	488,841	5.8466%
Additional Workday	-	-		-	-		-	-	
Sub-Total	13,414,020	1,070,805	7.9827%	3,873,025	232,231	5.9961%	8,361,087	488,841	5.8466%
Cost Reductions	(454,796)	-		(339,052)	-		-	-	
Sub-Total	12,959,224	1,070,805	8.2629%	3,533,973	232,231	6.5714%	8,361,087	488,841	5.8466%
Other Programs	340,981	13,261		5,435	2,927		12,851	5,994	
Total TYAR Costs	*13,300,205*	*1,084,066*	*8.1507%*	*3,539,408*	*235,158*	*6.6440%*	*8,373,938*	*494,835*	*5.9092%*
Supervisor Cost Reduction		(22,347)			(22,931)			(5,243)	

Schedule D - 1
Calculation of DMA/Buc Adjustment
(continued)

	After Rates								
	Mail Processing		Cost	City Carriers		Cost	City Carriers		Cost
	Clks. & MH	Superv.	Ratio	In-Office	Superv.	Ratio	Street	Superv.	Ratio
FY 1997 Costs	12,947,981	1,027,801	7.9379%	3,731,784	217,175	5.8196%	8,121,138	472,651	5.8200%
Cost Level	192,048	20,924		57,599	4,612		125,350	9,524	
Sub-Total	13,140,029	1,048,725	7.9811%	3,789,383	221,787	5.8528%	8,246,488	482,175	5.8470%
Mail Volume	340,506	27,244		81,193	5,229		46,261	2,691	
Sub-Total	13,480,535	1,075,969	7.9816%	3,870,576	227,016	5.8652%	8,292,749	484,866	5.8469%
Non-Volume Workload	-	-		-	-		49,684	2,890	
Sub-Total	13,480,535	1,075,969	7.9816%	3,870,576	227,016	5.8652%	8,342,433	487,756	5.8467%
Additional Workday	-	-		-	-		-	-	
Sub-Total	*13,480,535*	*1,075,969*	*7.9816%*	*3,870,576*	*227,016*	*5.8652%*	*8,342,433*	*487,756*	*5.8467%*
Cost Reductions	(460,196)	-		(339,052)	-		-	-	
Sub-Total	13,020,339	1,075,969	8.2638%	3,531,524	227,016	6.4283%	8,342,433	487,756	5.8467%
Other Programs	341,111	13,313		5,436	2,925		12,851	5,975	
Sub-Total	13,361,450	1,089,282	8.1524%	3,536,960	229,941	6.5011%	8,355,284	493,731	5.9092%
Workload Mix Adjustment	(39,628)	-		-	-		(14,866)	-	
Total TYAR Costs	13,321,822	1,089,282	8.1767%	3,536,960	229,941	6.5011%	8,340,418	493,731	5.9197%
Supervisor Cost Reduction		(22,818)			(22,492)			(5,216)	

Schedule D - 2
Calculation of Priority/Express Volume Effect Adjustment

Priority Mail	
Base Year Volume	937,273
Test Year AR Volume	1,110,446
% Change	18.476%
Network Costs added in BY	64,237
MV effect on SF Network Costs	11,869
TY Cost Level (-0.0294)	(349)
TYAR Final Adjustment	(11,520)
Express Mail:	
Base Year Volume	57,573
Test Year AR Volume	59,913
% Change	4.0644%
Network Costs added in BY	121,639
MV effect on SF Network Costs	4,944
TY Cost Level (-0.0294)	(145)
TYAR Final Adjustment	(4,799)

Comparison of Costs Attributed by
Cost Segment and Component
($ 000's)

	PRC R97-1 Test Year			USPS R97-1 Test Year		
	Accrued Cost	Attributable Cost	Percent Attributable	Accrued Cost	Attributable Cost	Percent Attributable
1. Postmasters						
EAS 22 and Below	1,670,893	318,716	19.07	1,673,600	318,667	19.04
EAS 23 and Above	38,911	0	0.00	38,990	0	0.00
BMC Managers	24	0	0.00	24	0	0.00
Total	1,709,828	318,716	18.64	1,712,614	318,667	18.61
2. Supervisors & Technical Personnel						
Mail Processing	1,078,446	1,043,852	96.79	1,106,476	853,713	77.16
Window Service	182,987	89,128	48.71	188,200	91,183	48.45
Time and Attendance	65,419	43,906	67.12	67,269	38,802	57.68
City Carriers	721,019	395,190	54.81	742,289	365,696	49.27
Special Delivery	8,862	4,639	52.35	9,367	5,011	53.50
Rural Carriers	12,005	6,111	50.90	12,359	6,280	50.81
Vehicle Service	43,733	27,119	62.01	45,211	27,819	61.53
Higher Level Supervisors	196,246	64,859	33.05	202,150	57,189	28.29
Superv. Qual. Cntrl./Rev. Prot.	36,627	35,465	96.83	37,408	28,887	77.22
Superv. Central Mail Mark-Up	42,007	37,503	89.28	43,435	38,790	89.31
Joint Supv. Clerks & Carriers	232,271	172,783	74.39	238,883	150,538	63.02
Gen.Supv., Mail Process.	1,074	1,039	96.74	1,102	850	77.13
Gen.Supv., Coll.& Del.	469	250	53.30	483	235	48.65
Other Sup., Training	62,468	36,768	58.86	64,099	31,707	49.47
Other	736,124	0	0.00	759,262	0	0.00
Total	3,419,757	1,958,612	57.27	3,517,993	1,696,700	48.23
3. Clerks & Mailhandlers, CAG A-J						
Mail Processing	13,218,128	12,783,182	96.71	14,295,561	10,975,962	76.78
Window Service	2,113,808	1,028,647	48.66	2,051,431	992,846	48.40
Administrative Clerks	1,819,951	1,174,422	64.53	1,174,559	650,299	55.37
Time & Attendance	344,390	231,138	67.12	226,792	130,820	57.68
Specific Fixed	12,035	12,035	100.00	11,263	0	0.00
Total	17,508,312	15,229,424	86.98	17,759,606	12,749,927	71.79
4. Clerks, CAG K	9,957	4,367	43.86	10,071	4,421	43.90
6. City Carrier In-Office						
Direct Labor	2,870,430	2,532,315	88.22	2,894,888	2,553,401	88.20
CAG K and LTO	292	262	89.73	295	264	89.49
Support	658,233	593,205	90.12	663,907	598,231	90.11
Train. Veh.Prep. & Key Handl.	0	0	0.00	0	0	0.00
Total	3,528,955	3,125,782	88.58	3,559,090	3,151,896	88.56

Comparison of Costs Attributed by
Cost Segment and Component
($ 000's)

	PRC R97-1 Test Year			USPS R97-1 Test Year		
	Accrued Cost	Attributable Cost	Percent Attributable	Accrued Cost	Attributable Cost	Percent Attributable
7. City Carrier Street						
Elemental Load	1,282,103	1,241,375	96.82	1,842,365	1,247,988	67.74
Cov. Rel. Load - SSS	170,307	170,307	100.00	0	0	0.00
Cov. Rel. Load - MSS	559,878	0	0.00	0	0	0.00
Access - SSS	566,742	566,742	100.00	0	0	0.00
Access - MSS	1,703,279	129,584	7.61	2,205,350	276,017	12.52
Other Attributable	1,688,672	893,125	52.89	1,702,314	806,072	47.35
Route	2,365,393	127,102	5.37	2,651,423	127,979	4.83
Total	8,336,374	3,128,235	37.53	8,401,452	2,458,056	29.26
Grand Total City Carriers	11,865,329	6,254,017	52.71	11,960,542	5,609,952	46.90
8. Vehicle Service Drivers	443,973	275,352	62.02	448,974	276,307	61.54
9. Special Del. Messengers						
Office	19,087	14,905	78.09	19,983	15,762	78.88
Street	91,236	42,840	46.96	94,137	45,285	48.11
Equip. Mtnce. Allow.	0	0	0.00	0	0	0.00
Spec. Del. Fees	0	0	0.00	0	0	0.00
Fixed Attributable	0	51,568	0.00	0	0	0.00
Total	110,323	109,313	99.08	114,120	61,047	53.49
10. Rural Carriers						
Evaluated Routes	3,073,838	1,517,377	49.36	3,091,879	1,523,484	49.27
Other Routes	299,619	150,391	50.19	292,722	150,982	51.58
Equip. Maint. Allow.	336,387	0	0.00	336,995	0	0.00
Total	3,709,844	1,667,768	44.96	3,721,596	1,674,466	44.99
11. Custodial Maint. Service						
Mail Proc. Equip. Mtnc.	1,078,782	851,695	78.95	1,070,904	719,818	67.22
Clean.&Prot./Oth.Equip.	1,180,102	757,843	64.22	1,191,411	728,018	61.11
Contract Cleaners	53,334	34,250	64.22	53,402	32,631	61.10
Total	2,312,218	1,643,788	71.09	2,315,717	1,480,467	63.93
12. Motor Vehicle Service						
Personnel	288,573	136,212	47.20	288,935	72,996	25.26
Supplies & Materials	329,490	155,308	47.14	328,764	84,015	25.55
Vehicle Hire	30,372	17,928	59.03	30,337	14,534	47.91
Total	648,435	309,448	47.72	648,036	171,545	26.47
13. Misc. Operating Costs						
Drive out and Carfare	57,190	8,531	14.92	57,709	7,935	13.75
Tolls & Ferriage	3,966	0	0.00	4,003	0	0.00

Comparison of Costs Attributed by
Cost Segment and Component
($ 000's)

	PRC R97-1 Test Year			USPS R97-1 Test Year		
	Accrued Cost	Attributable Cost	Percent Attributable	Accrued Cost	Attributable Cost	Percent Attributable
Other	229,389	0	0.00	229,941	0	0.00
Total	290,545	8,531	2.94	291,653	7,935	2.72
14. Transportation						
Domestic Air	1,327,123	1,327,123	100.00	1,435,493	1,224,092	85.27
Alaskan Air	86,301	18,175	21.06	0	0	0.00
Highway	1,860,019	1,510,348	81.20	1,863,909	1,512,070	81.12
Railroad	279,449	277,572	99.33	283,882	281,987	99.33
Domestic Water	27,851	27,409	98.41	28,232	27,789	98.43
International Water	708,393	708,393	100.00	715,007	715,007	100.00
Total	4,289,136	3,869,020	90.21	4,326,523	3,760,945	86.93
15. Building Occupancy						
Rents	687,685	687,685	100.00	688,500	688,500	100.00
Fuel & Utilities	429,402	275,755	64.22	428,502	261,838	61.11
Other	422,139	0	0.00	423,681	0	0.00
Total	1,539,226	963,440	62.59	1,540,683	950,338	61.68
16. Supplies & Services						
Custodial & Building	1,403,148	901,078	64.22	1,407,999	860,365	61.11
Equipment Maintenance	393,760	262,645	66.70	392,858	210,101	53.48
Exped. Mail Supp.& Serv.	190,599	190,599	100.00	190,599	190,599	100.00
Stamps & Dispensers	258,235	258,048	99.93	247,888	247,710	99.93
Compreh. Tracking & Tracing	103,392	103,392	100.00	103,392	-	0.00
Advertising	299,001	83,937	28.07	299,001	-	0.00
Embossed Stmp. Env.	16,937	16,937	100.00	14,919	14,919	100.00
Money Orders	4,679	4,679	100.00	4,339	4,339	100.00
Other	871,942	1,233	0.14	870,394	1,233	0.14
Total	3,541,693	1,822,548	51.46	3,531,389	1,529,266	43.30
18. Administrative & Regional Operations						
Workers Compensation	753,348	407,487	54.09	738,848	350,253	47.41
Repriced Annual Leave	53,528	35,045	65.47	57,421	32,314	56.28
Holiday Leave	4,000	2,619	65.48	4,000	2,251	56.28
Retiree Health Benefits	602,927	394,735	65.47	604,676	340,275	56.27
Annuitant COLA/LI	589,446	385,908	65.47	616,605	346,988	56.27
USPS Protection Force	81,358	52,247	64.22	81,977	50,092	61.10
Unemployment Compensation	84,800	55,518	65.47	84,800	47,720	56.27
CSRS/FERS Retire. Prin.	1,170,415	766,268	65.47	1,181,478	664,865	56.27
Specific Fixed	3,392	3,392	100.00	3,421	107	3.13
Other Personnel	947,532	0	0.00	949,977	0	0.00
Other	271,774	0	0.00	272,499	0	0.00

Comparison of Costs Attributed by
Cost Segment and Component
($ 000's)

	PRC R97-1 Test Year			USPS R97-1 Test Year		
	Accrued Cost	Attributable Cost	Percent Attributable	Accrued Cost	Attributable Cost	Percent Attributable
Total	4,562,520	2,103,219	46.10	4,595,702	1,834,865	39.93
20. Depreciation & Other Servicewide Costs						
Vehicle Deprec.	203,068	96,383	47.46	203,066	47,523	23.40
Mail Proc. Equip. Deprec.	1,139,946	670,064	58.78	1,139,946	555,651	48.74
Bldg. & Leasehold Deprec.	596,680	596,680	100.00	581,680	581,680	100.00
Indemnities	17,412	17,412	100.00	17,698	17,698	100.00
Note Interest Expense	219,053	153,940	70.28	306,214	188,508	61.56
Retirement Interest Expense	1,611,412	1,054,988	65.47	1,619,663	911,449	56.27
Annuitant COLA/HB Int. Exp.	-	-	0.00	-	-	0.00
Imput. Int. Special Assess.	16,700	-	0.00	16,700	-	0.00
Other Interest	10,899	-	0.00	10,899	-	0.00
Other	202,675	0	0.00	202,984	0	0.00
Total	4,017,845	2,589,467	64.45	4,098,850	2,302,509	56.17
17. Res., Develop., & Engr.	57,201	0	0.00	57,201	0	0.00
19. Support Services	38,855	0	0.00	38,972	0	0.00
Grand Total All Segments	60,074,997	39,127,030	65.13	60,690,242	34,429,357	56.73

ANALYSIS OF POSTAL SERVICE MAIL PROCESSING LABOR COST MODELS

1. Comments on Standards for Econometric Evidence

There should be no presumption that the Commission will always accept econometric estimates in lieu of assumed or judgmental values. The Commission has been presented with econometric evidence to supplant assumed volume variabilities in past proceedings, and on those occasions the econometric evidence has been considered on its merits, and both accepted and rejected. In Docket No. R84-1, the Commission rejected an econometric model proposed by Postal Service witnesses for estimating the volume variability of purchased surface transportation costs and chose to continue to rely upon the assumption that such costs were 100 percent volume-variable. In Docket No. R87-1, witness Bradley presented a reestimated version of the econometric model for purchased transportation. *See* PRC Op. R87-1, paras. 3498-3504. A more general translog version of the model was fit to the same sample by Postal Service witness Lion and presented while the R87-1 proceeding was underway. *Id.*, paras 3502-08. After hearing extensive testimony by many parties, the Commission accepted witness Lion's estimates. *Id.*, paras 3505-18. These estimates were also relied upon in R90-1 and R94-1.

The blueprint for a successful application of econometrics is well-understood and parallels closely the subheadings witness Bradley has chosen to describe his own research. These subheadings include "Choosing the Variables to Include in the Model," "The Nature of the Data Used," "Specifying the Functional Form," "Choosing a Method of Estimation," "Results for Econometric Equations..." and "Alternative Econometric Analyses..." A similar list can be drawn from the testimony of one of witness Bradley's main critics, OCA witness Smith, "A correct methodology would include the following: (1) An adequate data base, appropriately verified and complete; (2) A discussion of the modeling approach and how it is consistent with the underlying data; (3) An adequate

model and analysis of functional properties; (4) A correct estimation procedure which is suitable to the estimation needs at hand; and (5) A discussion of results in which the values, signs, and other outputs are fully explained." *See* Tr. 28/15900-913. UPS witness Neels cites concerns that are not too different "If the data upon which the study is based are unreliable, if the model is misspecified, or if the analysis is technically flawed, one should be extremely cautious in basing conclusions regarding variability on the study's results, regardless of the specific numerical value of the estimate. If, however, one has no reason for concern regarding the quality of the analysis, other considerations come into play." *See id.* at 15721. The Commission considers all of these aspects of econometric studies and would add that the models should be derived from the appropriate economic theory and the estimates should fit correctly within any system, such as witness Degen's, that applies them.

The Commission's rules require that witnesses explain and completely disclose all of the essential estimations and tests on the research trail that led to their recommended models. The Commission's proceedings also require the disclosure of all data and methods, partly for the purpose of inviting interested parties to conduct econometric explorations of their own. This open approach further encourages sponsors of econometric research to extend their own initial research in response to the issues raised during Commission proceedings. All of this is intended to produce a body of econometric evidence from which the Commission can select a best model and make an informed judgment of its properties.

Witness Bradley's direct testimony and workpapers disclose results for five different fitted models. Eleven more models are to be found in his response to P.O. Information Request No. 4, three more in his Statement for Notice of Inquiry No. 4, and another seven in his rebuttal testimony. Four additional models were contributed by UPS witness Neels in his direct testimony, and one more from Notice of Inquiry No. 4. Two came from MPA witness Higgins in his response to Notice of Inquiry No. 4. Altogether, this does not constitute a particularly extensive body of research on a subject as important as mail

processing variability. However, it is sufficient for the Commission to apply its basic standards for judging econometric research.

First, the Commission reviews econometric research using the criteria and professional standards described in testimony, primarily by practicing econometricians. The purpose of this review is to determine which models, in the turn-of-phrase used by witness Higgins, have been "left standing." In short, the Commission determines which models have been fit to an acceptable data set and are free of gross defects in specification and estimation. In this proceeding the Commission's review disclosed disqualifying defects in all of the models recommended by the Postal Service and other parties.

Second, the Commission tries to determine to what extent it can rely upon the statistical properties of the estimates of the models "left standing" on the assumption that the models have been correctly specified and estimated. In this regard the Commission's rules require the disclosure of all estimation results that are commonly applied to measure goodness-of-fit, to apply hypothesis tests on coefficient estimates, to make projections and measure their variation and to test residuals for violations of common assumptions regarding the distributions of errors. In general, the Commission tries to determine if the data rejects the model. This is done by examining the statistical tests that have been performed for evidence that either economic or statistical assumptions have been violated.

Finally, the Commission tries to identify, from among the models provided in testimony, a preferred model that it can safely rely upon. The Commission attempts to do this by examining the models without serious defects to find the model that is technically superior on economic or statistical grounds to all other candidates. If all of the proposed models have serious defects, as was the case in this proceeding, the Commission still attempts to select a preferred model that is stable and robust in the sense that the econometric research has been carried to the point of demonstrating that minor and plausible changes in the preferred model, data set, and estimation methodology do not yield major changes in the results that the Commission intends to

use. *See Id.* at 15786. Again, in this proceeding, none of the models appeared to be stable and robust. In fact, the research necessary to establish these properties for any of the recommended models was largely missing from the hearing record.

Clearly, a finding that a result can be "relied upon," that a model is "technically superior" or that estimates are "stable" and "robust" is a somewhat subjective judgment. In making such judgments the Commission credits the informed opinions of the qualified professional economists who testify in Commission proceedings.

It is the Commission's general impression that most of the econometric research submitted in a rate proceeding is subject to improvement. Relying upon any of it entails a certain tolerance for omissions and defects. In Docket Nos. R84-1, R87-1 and R90-1, the Commission accepted and used econometric models to forecast mail volumes that it considered to be defective for a variety of reasons documented in the Commission's Opinions for those proceedings. The volume forecasting models for Docket No. R94-1 and the current proceeding are much improved but still retain features in their specification, estimation and application that the Commission regards as subject to improvement.

The Commission tolerates identifiable defects in econometric models and methodology to the extent that it can be demonstrated that there exist reasonable grounds for a belief that the recommended rates would not be affected if the defects were corrected. For example, the volume equations used in Docket Nos. R87-1, R90-1 and R94-1 often included a seasonal term calculated in a way that reintroduced elements of the equation error into the seasonal term. This is an elementary violation of the assumptions underlying the application of least squares and most other econometric estimation techniques. However, it did not appear to the Commission in these dockets that correcting the defect would have much affect on the volume forecasts. Correcting the defect, as has been done for many of the volume equations for R97-1, mostly affects the statistics that describe goodness-of-fit and confidence in the estimates.

Unfortunately, none of the defects in the mail processing variability models submitted in the current proceeding can be regarded with the same detachment with which the

Commission regarded the improper seasonal terms in the volumes equations. It is quite obvious from the evidence that correcting any of the major defects cited by the Commission in the mail processing models can have a pronounced effect on the volume-variabilities for mail processing labor costs. These variabilities apply to large cost pools, so correcting the defects in the models and associated data sets is virtually certain to affect the rates recommended by this Commission.

The Commission is tolerant of omissions in the research plans that witnesses follow to produce their econometric results. This is partly because the Commission does not wish to discourage econometric evidence by erecting preemptive standards. Most of the many judgments that are entailed by a research plan are best made by the econometrician who is conducting the research. Moreover, most econometric research is fairly open-ended, so a practical research plan usually necessitates a decision to stop considerably short of doing all potentially relevant data verifications, model selections, estimations and tests. However, witness Bradley's research fell short of performing all of the explorations and tests that would be needed to establish stability and robustness, and his research left an obvious superior model unidentified.

2. Model Formulation Issues

Developing and implementing statistical procedures for characterizing the relationship between the quantity of output produced and production costs at the firm or plant level is a long-standing and active area of research in economics. The combination of economic and econometric theory provides standards for the proper methodology to employ to recover the most accurate estimate possible of the relationship between output and costs occurring within the firm, given the data set available to the researcher. These standards are generally known and are not much disputed by professionally-trained economists and econometricians.

The proper application of proper econometric methodology has many benefits, including: (1) it defines the true economic relationship between cost and volumes to be

measured, (2) it prescribes methods for retrieving the most accurate and unbiased estimates possible of the parameters of the true relationship, and (3) it provides measures to assess the empirical validity of the estimated relationship. An econometrician who steps outside the accepted boundaries of economic and econometric theory foregoes these benefits. Once the Commission steps outside the boundaries delimited by proper economic and econometric method, it is in a world described by the Commission in Docket No. R87-1. "(A)n imaginative analyst can obtain almost any desired variability estimate by carefully choosing the variables and the time period to be used in the analysis." The Commission has considered whether witness Bradley has chosen the "variables," the "time period to be used in the analysis" or any other component of his models in ways that predetermine the "variability estimate" that is derived from his analysis.

a. Witness Bradley's Model Is Not a Cost Function

A necessary first step in accurately characterizing the relationship between volume and costs at the facility level is a precise statement of the true causal relationship between these two variables that the econometric analysis is attempting to measure. Stated differently, unless a clear statement is given of the effect being estimated, the accuracy and credibility of the resulting magnitude cannot be judged. In addition, a precise statement of the true relationship being estimated severely constraint the set of econometric models that can be used to recover an accurate estimate of this relationship.

In order to define precisely the true effect under consideration, several questions must be answered. What is the structure of the technology — the set of mail processing volume levels that can be produced from a given level of inputs? What objectives do postal managers pursue in choosing the inputs necessary to process the mail at the various facilities? How does the Postal Service operate in the markets where it purchases the labor and other inputs necessary to process the mail it receives? What inputs can Postal Service managers alter in response to a sustained increase in postal

volume? Once these questions have been answered, the true relationship between volume and costs can be rigorously defined.

Without this precise statement of the relationship to be estimated the following questions cannot be answered. What variables should be included in the econometric model? What estimation technique should be applied? In addition, any measure of the quality of a econometric estimation procedure requires comparing the value of the estimate obtained to its true value over possible realizations of this estimate. Therefore, a precise definition of this relationship is not simply an exercise in intellectual rigor for its own sake, but a vital input to any process used to judge the validity of an econometric procedure used to recover an estimate of the relationship.

In his testimony, witness Bradley skips this crucial step. Missing from his discussion is the definition of the volume variability estimate he is attempting to estimate. In fact, witness Bradley makes a distinction between a cost equation and a cost function. He states, "A cost function is derived from the cost minimization process that you describe below. A cost equation is not. A cost equation is simply an equation relating cost to its cost driver in a way that presumes the existence of a reasonably well-defined set of operating procedures used to process mail. It does not require or depend upon cost minimization." Tr. 11/5308-311. In his direct testimony he presents a series of *ad hoc* explanations for why he includes each variable in his econometric model. *See* USPS-T-14 at 12-17. The only requirement that he imposes on his cost equation is that it have the logarithm of hours as the dependent variable and the logarithm of Total Piece Handlings (TPH) included among the independent variables. However, for each one of the effects he is attempting to capture with a given regressor, there are many other possible regressors that one could imagine using.

Despite being careful to make the distinction between a cost equation and a cost function in responding to the DMA, when responding to interrogatories from the UPS, he cites many cost function studies as providing justification for his use of the translog cost equation in his analysis. *See* Tr. 11/5456-58. However, the goal of the studies he cites is to estimate cost functions derived from economic theory, not cost equations relating

costs to volume. In fact, "cost equation" appears to be a term-of-art invented by witness Bradley for the purposes of his testimony. In responding to the DMA he does not provide a citation to the relevant literature in economics for a "cost equation." *Id.* at 5308-311. Given the arbitrary nature of witness Bradley's cost equation, the Commission's criticism in Docket No. R87-1 that "an imaginative analyst can obtain almost any desired variability estimate by carefully choosing the variables and the time period to be used in the analysis," seems to apply.

Witness Bradley's failure to define precisely the true relationship he is attempting to measure has caused confusion among the parties. OCA witness Smith and UPS witness Neels express concerns about his analysis which can be traced to the lack of a precise definition of the true relationship being estimated. For example, witness Smith shows that witness Bradley's cost equation is not consistent with the economic theory of production relevant to mail processing. Witness Neels focuses on the fact that although witness Bradley claims to be measuring the relationship between mail processing labor costs and mail volume, he uses inadequate proxies for both cost and mail volume in his econometric model. Witness Neels points out that hours of labor is not the same as labor costs and, given the technological change that has occurred in mail processing over time, TPH is not a good proxy for mail volume. All of these disputes between witness Bradley and other witnesses can be traced to the fact that he did not provide a precise definition of the effect he intended to measure at the outset of his analysis.

To see that Witness Bradley's statement that hours can proxy for costs is incorrect, consider the following simple example. Suppose there are two different wages paid to workers employed in a given operation during an accounting period. For simplicity assume that the lower wage is for unskilled labor hours and the higher wage is for skilled labor hours. If the ratio of skilled labor hours to total hours is constant over all accounting periods and facilities, then using total hours in an accounting period as a proxy for total labor costs will be valid so long as the wages paid for skilled and unskilled labor are fixed

over time and across facilities.[1] However, if during accounting periods with high volumes, skilled hours are a larger fraction of total hours than in other accounting periods, using total labor hours as a proxy for labor costs will understate the true volume variability, even if the wage rates are fixed over time and facilities.

Although this example used the case of skilled and unskilled labor hours, it applies equally well to any instance where workers are paid different wages in the same activity because of years of experience with the Postal Service, employment status (casual or full-time), or job definition. In general, if the proportionality assumption in the example fails, hours is no longer a valid proxy for labor costs, as witness Bradley assumes throughout his analysis. Estimates of the relationship between costs and mail volume based on this invalid proxy will therefore be biased and inconsistent.

b. Witness Bradley's Fixed Effects Are Not Good Controls

Witness Bradley further confuses the issue of model selection by making overly strong claims about the ability of the fixed-effects estimator to control for unobserved heterogeneity at the facility level. In his response to P.O. Information Request No. 7, Question 4, witness Bradley contrasts the analysis of the determinants of operating efficiency at the mail processing facility described in his paper with Donald M. Baron, published in *Operations Research*, with the analysis of the relationship between mail processing costs and mail volume he presents in USPS-T-14. He states that in his

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[1] Define:
W_s= skilled labor wage rate
W_u= unskilled labor wage rate
L_s = skilled labor hours
L_u = unskilled labor hours
Labor costs are: $C=W_sL_s+W_uL_u$
Assume $L_s/(L_s+L_u) = k$ (a constant)
then $L_s = k(L_s+L_u)$ and $L_u = (1-k)(L_s+L_u)$
substitute $C = W_sk(L_s+L_u)+W_u(1-k)(L_s+L_u)$
Rearrange $C = (L_s+L_u)[kW_s+(1-k)W_u]$.
Labor Costs are the product of total hours, L_s+L_u, and a weighted average wage, $kW_s+(1-k)W_u$

published paper he uses a pooled model which, "contains proper variables to control for the site-specific effects...." Tr. 19E/9747. He goes on to state that:

> When non-volume site-specific effects are important, they must be accounted for in the regression equation. One approach, which I took in my earlier, published paper, was to estimate a pooled model with variables included to account for non-volume site specific effects.

Ibid.

He then goes on to state that in USPS-T-14, he accounts for site-specific effects using an "alternative approach, through the use of the fixed effects model, or heuristically, the inclusion of the site-specific effects (α_i)." *Ibid.* Witness Bradley then goes on to produce a table of the factors he uses in his published paper to control for site-specific heterogeneity.

In Table 1 of P.O. Information Request No. 7, Question 4, witness Bradley lists such variables as the degree of automation, age of the facility, degree of support costs, space utilization, degree of flex labor, delivery network and number of locations. *Id.* at 9750. All of the variables can and do vary over time and across facilities. Consequently, their inclusion in the regression equation controls for site-specific differences that can be explained by changes in these factors over time and across facilities. However, the fixed-effect models that witness Bradley uses in USPS-T-14 cannot control for changes in site-specific characteristics over time that are due to changes in these variables with a fixed-effect. A fixed-effect is by definition, fixed for all time for a given facility. It can only control for differences across facilities that are constant for all time. However, variables such as the degree of support costs, space utilization, degree of flex labor, as well as several others, vary over time for the same facility and are persistently different across facilities. If it is important to control for these differences in facilities over time in recovering the relationship between mail processing costs and mail volume, then witness Bradley's fixed-effects estimation procedure is unable to yield a valid estimate of this relationship.

There are many factors that change across time that should be held constant in measuring the volume variability of mail processing costs. Witness Bradley's fixed-effect can only control for those that are constant for all time at a given facility. Consequently, he is overstating the validity of his fixed-effect estimator relative to one which contains volume and time specific controls in his response to P.O. Information Request No. 7, Question 4. He states, "the *Operations Research* article featured a pooled model equation with appropriate control variables whereas USPS-T-14 features panel data with a fixed effects model. Because fixed effects in the panel data model *serve the same purpose* — controlling for site-specific non-volume effects — as the control variables in the pooled model, it not necessary to include control variables in the fixed effects models." Tr. 19E/9749 (emphasis added). As the above discussion should make clear, this statement is incorrect. The fixed effects can only control for effects that do not change over time for a given facility, whereas in the inclusion of regressors that vary over-time and facility control for specific effects that can vary over time for a given facility and across facilities and can be included in a model that also contains a fixed effect.

c. Witness Bradley's Selection of Variables Is Not Based on Theory

Witness Bradley's arguments for including variables in the model do not arise from an explicit economic model of mail processing that, when combined with a Postal Service operating plan, give rise to a stochastic relationship between mail processing volume and costs. Instead he gives an *ad hoc* explanation for each variable in his econometric model. However, without a precise definition of the true magnitude being estimated, an informal argument can be made to justify the inclusion of almost any variable in the regression equation and almost any functional form can be chosen.

Because these regressors are correlated with mail volume and can be made even more so by the creative selection of appropriate transformations or combination with mail volume, virtually any estimate of the sensitivity of mail processing costs to mail volume can be obtained by selecting these additional regressors. The manual ratio variable is a case in point, because it is a function of Total Pieces Handled (TPH), the variable used

as the mail volume driver. Only a precise definition of the true value of the relationship being estimated will place sufficient restrictions on the functional form and the types of control variables that can be included in the resulting econometric model so as to constrain in an economically meaningful manner, the estimated relationship between mail volume and costs.

The lack of a precise definition of the true value of the magnitude being estimated implies that any regression with mail volume (as either an independent or dependent variable) and mail processing costs (as either an independent or dependent variable) and other regressors that can somehow be justified as controlling for differences in this relationship across facilities or over time is a candidate for recovering a valid estimate of the relationship between mail processing volume and costs.

A cost equation with a firm foundation in the economic theory of production as suggested by witness Smith will not fall prey to this arbitrariness. As noted on page 6 of Smith's testimony, "The theory of production functions requires that in order to properly relate, mathematically, inputs and outputs, an analysis is required of the properties of the functions, including capital/labor tradeoffs, expansion paths and economies of scale. Cost functions are derived from the theory of production functions." Witness Bradley is explicitly agnostic about the economic theory of production in specifying the econometric model he is estimating. As a consequence he includes variables in his model which are correlated with his volume proxy (in ways that are not justified by economic theory), the exclusion of which would lead to very different estimates of the relationship between processing costs and mail volume.

d. Witness Bradley's Model Is Not Specified for the Right Production Period

A final problem with witness Bradley's procedure for defining a true relationship between volume and costs deals with the issue of the proper span of time in the

aggregation of the data, the definition of the model, and the estimation procedure employed. The frequency of the collection period for the observations in the sample is not the issue here. There are a number of ways that accounting period data might be used to estimate a model that reflects volume-variabilities over longer periods of time. Two of these methods are aggregation over time and distributed lag estimators, such as those found in Postal Service witnesses Tress' and Musgrave's volumes models.

One of the first steps in deriving the form of the true relationship between volume and costs is the specification of the production period — the length of time over which production flows and input use take place. The postal rate cycle, the period of time over which postal rates are fixed, is the appropriate production period for the purposes of determining the relationship between costs and mail volume. During this production period, the Postal Service uses its operating plan to determine the optimal input flows necessary to process the flow of mail volume. Both witness Neels and witness Smith have observed that, because of this relatively long production period, the cross-sectional dimension of the empirical relationship between costs and volume is more important for determining the true relationship between costs and volume.

The cyclical nature of mail volume over a rate cycle implies that the relationship between input use and mail volume across adjacent accounting periods will primarily reflect seasonal variation in mail volume. On the other hand, staffing levels, and therefore hours, would be set to reflect sustained annual or postal rate cycle volume levels. Therefore, large changes in volume across accounting periods can occur with little change in labor hours across accounting periods, leading to a low variability estimate.

e. Witness Bradley's Fixed Effects May Not Be Correct

Using economic theory to specify the true relationship, along with the associated production period implied by the Postal Service's operating plan, provides a basis for selecting one estimation procedure over another. In particular, the rate cycle production

period implied by the theoretical framework described in the previous section requires an estimation procedure which relies on persistent differences in the mode of operation across facilities, rather than differences in mode operation within the same facility over short time horizons. Differences in the operation of facilities of different sizes would more accurately reflect the relationship between volume and costs that would occur over a production period as long as a rate cycle than would differences in the operation of the same facility over adjacent time periods. Consequently, an estimation procedure which primarily relies on the cross-sectional dimension of the panel dataset is preferred to one that relies on differences over time within the same facility, such as the fixed-effect estimator.

This logic rules out the fixed-effects estimators employed by witness Bradley as recovering an accurate estimate of the true relationship between mail volume and costs. The fixed-effect estimator attempts to estimate a short-run relationship between mail volume and costs that is inconsistent with the Postal Service's operating plan over the rate cycle. Given the Postal Service's operating plan, there is no guarantee that this relationship between mail volume and costs is stable across accounting periods within the same facilities or across facilities. If input planning decisions are made for a longer time horizon, differences in accounting period to accounting period mail volume changes will mostly be satisfied by changes in the rate of capacity utilization of labor and capital at the mail processing facilities. Under the circumstances, witness Bradley's fixed effects estimators would recover unrealistically low estimates of volume variability.

Therefore, the Commission finds that it would be invalid to base postal pricing decisions on volume and cost relationships estimated on differences across no more than two, four-week accounting periods.

3. Applicability Issues

The Commission's review of the testimony of Postal Service witnesses shows that the mathematics and quantitative applications found scattered throughout this testimony comprise a complete and internally consistent plan for applying witness Bradley's econometric results within the framework for attributing mail processing labor costs proposed by witness Degen. However, this application depends upon a number of simplifying assumptions that were not altogether clear in the Service's initial filing. Most involve more-or-less appealing hypotheses about the economics and operations of the postal processing system that could be tested in various ways. But this has usually not been done. Consequently, accepting witness Bradley's estimates would have entailed a considerable and unwarranted act of faith by the Commission.

The assumptions made by Service witnesses are often more easily isolated from their mathematics than from their verbal testimony. Therefore, the discussion which follows is accompanied by a mathematical treatment in footnotes, using a system of notation that is uniform and simpler than that used by Postal Service witnesses, Panzar, Christensen, Degen and Bradley from whose testimony it is mainly derived.

a. The Bradley/Degen System

Witness Bradley describes the "new approach to measuring volume-variable mail processing labor costs" as a two-step "'volume variability – distribution key' method. ... In the first step, sometimes called the 'attribution step,' the Postal Service multiplies accrued cost times the elasticity of those costs with respect to a cost driver. This multiplication produces the pool of volume-variable cost. In the second step, sometimes called the 'distribution step,' the Postal Service distributes the pool of volume-variable cost to individual subclasses." *See* USPS-T-14 at 5 (footnote omitted). Witness Bradley is describing the workings of a formula that can be found in the testimony of several

Service witnesses including Panzar, Degen and Christensen.[2] *See* USPS-T-11 at 23, Tr. 34/18222 and Tr. 11/5434-35. In words the formula is:

> The Volume-variable Cost from a Pool Attributed to a Subclass
> Equals [The Total Mail Processing Cost in the Pool]
> Times [The Elasticity of Cost w/r a Cost Driver for the Pool]
> Times [The Elasticity of the Driver w/r the Volume of Subclass Mail]

In the cost pools corresponding to MODS, non-MODS and BMC activities, the drivers are total piece handlings (TPH) for the activities or, in the case of allied operations, combinations of piece handlings for related activities, and the subclasses are the subclasses that have volumes that are processed. Applying the elasticity with respect to a cost driver to the total cost pool is the "attribution step". Multiplying again by the elasticity of the driver with respect to the volume of mail for each subclass is the "distribution step."

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[2] Define C = mail processing cost pool
D = mail processing cost pool driver (TPH)
V = subclass volume
From witness Christensen, USPS-RT-7, at page 6.

$$\frac{d\ln C}{d\ln V} = \left(\frac{d\ln C}{d\ln D}\right)\left(\frac{d\ln D}{d\ln V}\right)$$

Since d ln X = d X/X

$$\frac{dC}{dV}\frac{V}{C} = \left(\frac{dC}{dD}\frac{D}{C}\right)\left(\frac{dD}{dV}\frac{V}{D}\right)$$

Multiply through by C

$$\frac{dC}{dV}V = C\left(\frac{dC}{dD}\frac{D}{C}\right)\left(\frac{dD}{dV}\frac{V}{D}\right)$$ Volume variable Cost of subclass i

Define elasticities

$$E_{CD} = \frac{dC}{dD}\frac{D}{C}$$ Elasticity of cost w/r cost driver

$$E_{DV} = \frac{dD}{dV}\frac{V}{D}$$ Elasticity of the cost driver w/r subclass volume

Substituting:

$$\frac{dC}{dV}V = CE_{CD}E_{DV}$$

Note also that dC/dV is marginal cost.

b. The Proportionality Assumption

In P.O. Information Request No. 4 the Chairman asked the Service and parties to answer several questions regarding the "assumption of proportionality" as it might have arisen in applying the formula above. The "assumption of proportionality" as stated by the Commission is "that the TPH for each cost pool activity in each facility is proportional to the volume of mail processed by the activity". The responses received from Postal Service witnesses Degen and Bradley make it clear that the "assumption of proportionality" is irrelevant for the attribution step and that witness Bradley's testimony "does not depend upon any such assumption." *See* Tr. 11/5433-34.

However, a form of the assumption of proportionality at the system level is essential to the distribution step performed in the testimony of witness Degen.[3] *Id.* at 5422-28. The elasticity of the driver with respect to the volume of subclass mail is estimated by the "distribution key" method. The proportionality assumption is that the amount of the driver contributed by a typical piece of subclass mail does not vary with volume. *Id.* at 5426. Thus the Postal Service's "new approach" depends upon a proportionality assumption when a distribution key is used as an estimate of the elasticity of the driver with respect to the volume of subclass mail. The formula is as follows:

The Elasticity of the Driver w/r the Volume of Subclass Mail
Equals [The Contribution of Subclass Mail to the Driver]
Divided by [The Total Amount of the Driver (TPH)]

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[3] V_i = Subclass "i" Volume, from footnote 1:

$$E_{DV_i} = \frac{dD}{dV_i}\frac{V_i}{D}$$ Elasticity of a cost driver w/r subclass:volume

From witness Degen response to POIR No. 4.

$$D = \sum_j a_j v_j$$ where a_j is the fixed contribution of subclass j volume to the driver

Differentiating w/r V_i

$$\frac{dD}{dV_i} = a_i$$

Substituting for dD/dV_i and for D

$$E_{DV_i} = \frac{a_i V_i}{\sum_j a_j v_j}$$ the distribution key for subclass i

And the contribution of the subclass to the driver is fixed in relation to the volume of the subclass. These cost driver proportions are estimated using proportions of IOCS tally costs for mail processing cost pools, since mail processing cost drivers are not observed by subclass. *Id.* at 5426. Distribution keys and the assumption of proportionality have been used by the Commission for many years to distribute postal costs to subclasses for ratemaking.

UPS witness Neels complaint that witness Bradley's "econometric equations look not at volumes, but rather at piece handlings, a measure of mail processing steps that is sensitive not only to volume, but also to changes in routing, sorting technology, error rates, and other factors" is best seen as an objection to the proportionality assumption as it is employed by witness Degen. Witness Neels continues "one must first estimate the extent to which piece handlings vary with volume, or provide some affirmative evidence that the two are proportional." Tr. 28/15590. The Commission has accepted the proportionality assumption for this proceeding but believes that further investigation would be desirable. In particular, it would be desirable to learn if the proportions are truly fixed, as assumed by witness Degen, or vary with volume as suggested by witness Neels. If the proportions are also volume-variable, then all of the volume-variability of mail processing labor costs cannot be derived from a regression of time on piece handlings.

c. Subclass TPH Proportions Can Be Derived from IOCS Tallies

Because witness Bradley estimates the elasticity of workhours with respect to Total Piece Handling (TPH) in each MODS pool, he recognizes that the subclass distribution of TPH is the theoretically appropriate distribution key. Witness Christensen acknowledges, however, that the Postal Service does not know the subclass distribution of TPH. It uses the subclass distribution of In-Office Cost System (IOCS) tallies, which indicate the proportion of time spent handling mail of various subclasses at MODS operations, as a proxy for the true distribution key. Witness Christensen argues that within a MODS pool, the total amount of variable tally dollars distributed by this key to a

subclass of mail is the equivalent of subclass marginal cost for that MODS operation. USPS-RT-7 at 3-5.

Witness Christensen recognizes that the Postal Service has not estimated the elasticity of subclass TPH with respect to subclass volume. He asserts, however, that one may assume that subclass TPH in a MODS pool is a fixed proportion of subclass piece volume, at least over a period as short as the base year. At least within the base year, witness Degen argues, one may assume that the elasticity of subclass TPH with respect to subclass volume in the base year is one. Subclass distribution keys may be constructed at the MODS pool level, witness Christensen argues, because unit volume variable costs may be aggregated to overall total marginal cost for a given service. USPS-RT-7 at 5-7.

d. Wages Are Not Volume-Variable

Witness Neels has also criticized witness Bradley for using labor hours as a "proxy for cost." In his words "one must either estimate the extent to which compensation per hour varies with volume, or provide some affirmative evidence that compensation per hour is independent of volume." *Id.* at 15589. Witness Bradley has done neither. Instead he has answered interrogatories and offered rebuttal testimony that make it clear to the Commission that average wage rates are treated as *not* volume-variable by assumption. In response to the OCA, "For the purpose of calculating variability, wages and hours are equivalent. Wages are set by collective bargaining, not volume." Tr. 11/5389. And in his rebuttal testimony "[w]ages are not a function of volume, particularly not small sustained changes in volume." Tr. 33/17882. The mathematics witness Bradley uses at both locations shows how the assumption simplifies the Postal

Service's calculation of volume-variable cost.[4] The following formula also works if "the Driver" is substituted for "Volume."

The Elasticity of Cost w/r Volume
Equals [The Elasticity of the Wage Rate w/r Volume]
Plus [The Elasticity of Hours w/r Volume]

Witness Bradley's assumption is that the elasticity of the wage rate with respect to volume (or the amount of the driver) is zero. Then he can treat the elasticity of cost and the elasticity of hours as the same. The difficulty that the Commission sees with this assumption is not that it is necessarily right or wrong, but that it is untested. The testimony of Postal Service witnesses does not include the "estimates" or "affirmative evidence" that are needed as a basis for the assumption that average wage rates in mail processing are independent of changes in volumes (or total piece handlings). If wage rates in mail processing and sustainable changes in volume or piece handlings move

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[4] Define W = the average wage rate for mail processing
H = mail processing hours
then C = WH
From footnote 1:

$$E_{CD} = \frac{dCD}{dDC}$$

From witness Bradley, USPS-RT-5, at pages 7-8.

$$E_{CD} = \frac{d(WH)}{dD}\frac{D}{WH}$$

Differentiate WH using the chain rule.

$$E_{CD} = \left(\frac{\partial W}{\partial D}H + \frac{\partial H}{\partial D}W\right)\frac{D}{WH}$$

Rearrange

$$E_{CD} = \frac{\partial WD}{\partial D}\frac{}{W} + \frac{\partial HD}{\partial DH}$$

Define elasticities

$E_{WD} = \frac{\partial WD}{\partial D}\frac{}{W}$ Elasticity of wages w/r cost driver

$E_{HD} = \frac{\partial HH}{\partial D}\frac{}{D}$ Elasticity of hours w/r cost driver

Substituting

$$E_{CD} = E_{WD} + E_{HL}$$

Witness Bradley assumes $E_{WD} = 0$ in order to get $E_{CD} = E_{HD}$.

together, then the elasticity of the wage rates will be positive. This can occur if the wage paid to employees who are hired and discharged in response to volume changes are higher than the average. Then witness Bradley's elasticities will understate the volume variability of mail processing labor costs. On the other hand, if employees who are hired and discharged are paid less than the average wage, then witness Bradley's elasticities will overstate the volume variability of mail processing labor costs.

If the mix of labor hours responds to volume changes, then there are a number of plausible ways that the average wage of processing workers could be affected. Witness Neels lists some of them in his direct testimony: "[a] shift in the mix of hours toward more costly types of time (such as overtime), higher paid crafts, more senior employees, [and] more highly paid categories of employees. ..." Tr. 28/15595. However, there are ways to doubt that any of these effects would necessarily accompany a sustained increase in postal volumes. The Commission's view is that this is an area where empirical research ought to be possible.

e. The Number (and Size) of Facilities Is Fixed

The direct testimony of Postal Service witnesses did not consider the possibility that the Service might respond to volume changes by altering the numbers and sizes of its processing facilities. However, the subject was raised by the Presiding Officer during the cross examination of UPS witness Neels. Witness Neels testified that as output increases, production facilities reach and then exceed their most efficient levels of activity. When this occurs "what one should then do is replicate the facility elsewhere." This is "a general response of any economic enterprise to an increase in volume. ... I would expect the number of facilities to vary with volume." Tr. 28/15791.

If the number of facilities varies with volume, then witness Bradley's elasticities are flawed because they do not correctly represent the variability of mail processing labor costs for the entire postal system.

> CHAIRMAN GLEIMAN: "Well, then, if the number of facilities ... – is volume-variable, does witness Bradley's method of applying average volume variability overlook this fact?"
>
> WITNESS NEELS: "I think it does. His analysis is structured to look at what happens within a given facility. He uses data across facilities to estimate that relationship, but essentially he's asking what happens if you increase the scale of activity within one MODS facility, what happens if you run more piece handlings through and how is that reflected in hours? It doesn't reflect the fact of just replicating the facility which would – in which case you'd expect costs to vary linearly with the number of facilities or directly with 100-percent variability."

Id. at 15791-92.

The response of Postal Service witness Degen to the issue is that the number of mail processing facilities is fixed. "When there is an overall volume increase, every facility in the country will experience additional workload which, in virtually all instances, will be absorbed without building new facilities." Tr. 36/19365 (emphasis omitted). But when witness Degen discusses the possibility of new facilities, he seems to be considering replacing existing facilities or adding facilities *at new locations*. "In the relatively infrequent case where a new facility is added to the system (as opposed to simply replacing an existing facility), the new facility is dedicated to a particular area that was previously served by one or more existing facilities." *Id.* at 19366 (footnote omitted). However, witness Neels reasoning works wherever new facilities are added, or even if the "new" facilities are simple expansions of existing ones at the same locations. Variations in mail processing costs in response to sustained changes in volume are not considered at the system level in witnesses Degen's and Bradley's new approach.

f. Application to Other Cost Pools

Witness Bradley was unable to estimate volume elasticities for all of the mail processing cost pools in witness Degen's framework. An examination of witness Degen's Table 4: *FY 1996 Mail Processing Cost Pools, Variabilities, and*

Volume-Variable Costs in his direct testimony shows that he was actually able to apply witness Bradley's estimates for the MODS cost pools to 60.25 percent of total mail processing costs. Another 4.68 percent of total processing costs are covered by witness Bradley's estimates for the BMC cost pools derived from the PIRS data. *See* USPS-T-12 at 15. Applying the new approach to all of the remaining mail processing costs requires an assumption supplied by witness Bradley. "For those cost pools without recorded workload measures, the best information available for approximating their variability is an estimated variability from a similar activity." USPS-T-14 at 86. Witness Bradley then applies his judgment to select elasticities or averages of elasticities that witness Degen uses to attribute another 3.37 percent for processing costs for general support activities at MODS facilities, 3.09 percent for mail processing activities without recorded piece-handlings at MODS facilities, 10.95 percent for customer service activities at processing facilities, and 17.65 percent for mail processing at non-MODS facilities.

Perhaps in the spirit of witness Bradley's "best available information" assumption, Postal Service witnesses Alexandrovich and Takis "borrow" witness Bradley's elasticities and apply them to an additional collection of 30 cost pools for mail processing equipment maintenance labor, parts and supplies, and depreciation. *See* USPS-T-5 Workpapers and USPS-T-41 Workpapers at II-7 and II-8. All of the cost pools are for automated or mechanized mail processing equipment used in specific MODS and BMC activities. Witness Bradley's testimony contains nothing to recommend such a large-scale use of his elasticities to mail processing equipment cost pools. Witness Takis provides a generalized defense of the "borrowing" in his workpapers. "[T]here is generally a one-to-one correspondence between the labor and equipment pools. Furthermore, these equipment pools obtain their variabilities from the corresponding labor pools. Finally, the labor cost pools and equipment cost pools are closely linked from an operational sense – mail processing labor for OCR operations, for example uses OCR equipment." The simplifying assumption that Postal Service witnesses appear to be relying on is that mail processing labor time, mail processing equipment maintenance labor time, parts and supplies costs, and depreciation costs all occur in fixed proportions

to each other for automated or mechanized processing activities such as optical character reader (OCR) operations.

4. Data Issues

One of the first steps in any econometric plan of research is to assemble a sample. Witness Bradley's sample was assembled from the electronic reports of two of the Postal Service's operational data systems. These are the Management Operating Data System (MODS), through which the processing activities of many postal facilities are reported, and the Productivity Information Reporting System (PIRS), through which the Service's Bulk Mail Centers (BMCs) report. Most mail processing is conducted at MODS offices, and it appears that MODS was chosen as the data source from the outset for the reasons stated by witness Bradley. "First, it is an operational data system, meaning that the product costs would be based upon operational data, providing a closer link between operational reality and those costs. Second, piece handlings are the cost driver for mail processing labor, and MODS records both piece handlings and hours. Third, MODS data can be organized in a way that reflects the mail flows on the workroom floor. ... Fourth, MODS is a 'live' data system that captures new operations (like remote barcoding) as they come on line. ... Fifth, MODS data are collected at many sites and are available on the corporate data base at an accounting period frequency." Tr. 11/5303-304. All of these are excellent reasons for using the MODS data for econometric research. All of these reasons also apply with about equal force to the PIRS data.

The data sets from MODS and PIRS are huge and can be organized as panels. There are around 300 sites in MODS, and the records span a period of 117 accounting periods (9 years). There are far fewer reporting sites in PIRS, and the time spanned is shorter; nevertheless, the PIRS data can also be organized as panels with a large number of observations for each facility and for each accounting period.

Witness Bradley claims three characteristics of panel data sets make them particularly suitable for econometrics. These are that the number of observations is much larger than the number of observations that are common for strict cross-sectional and time-series data sets. Second, there is likely to be much less multicollinearity within the panel among the variables that are used as regressors. And, third, the organization of panel data makes it possible to specify various configurations of dummy variables in ways that can control for some of the effects of missing variables. *See* USPS-T-14 at 23-24. On the other hand witness Bradley recognizes that the MODS and PIRS data were not collected specifically for econometric analysis and may contain errors. *Id.* at 28.

An early warning of just how dirty the MODS data might be can be found in Library Reference H-220. This is a report of the United States Postal Inspection Service entitled *Mail Volume Measurement and Reporting Systems*. The finding that is referred to and quoted by several parties appears on page 2. "Our audit of MODS scale transactions at 20 P&DCs revealed large variances between the mail pieces projected from MODS and actual pieces run for FHP volume. MODS low level of accuracy as an indicator of mail volume results from inadequate conversion factors, improper data input by employees, and scales out of tolerance." Tr. 11/5379; *see* Tr. 28/15601-602.

Witness Bradley was unaware of the Inspection Service report before performing his analysis. *See* Tr. 11/5379. Moreover, he apparently underestimated the severity and extent of the problems it describes. "I would also note that several of the report's findings are irrelevant for my analysis because much of the data set used in my analysis is not based upon FHPs, but rather on the end-of-run data and machine counts. This is true for all automated and mechanized activities. The issues of measurement error due to inaccurate weighing and/or conversion factors is an issue only in the manual activities." And, "given the anecdotal nature of the report and the fact that the report focuses on FHP rather than the THP data that I use, it is not possible to conclude from the report that there are serious errors in the data I use in my analysis." Tr. 11/5369-70. This is simply incorrect. The report describes the "variances" as "large." According to witness Neels

"[i]n one instance, the count projected by the MODS system for 57 trays [a MODS activity] was 29,637 pieces, while the actual piece count was 17,842 pieces – an error of 66 percent." Tr. 28/15601-602 (footnote omitted). Furthermore, the Commission fails to understand why "improper data input by employees" would not be a source of error in the data for all MODS activities.

Even without the report of the Inspection Service, a conscientious examination of the data sets would disclose unmistakable internal evidence of serious errors. This evidence is:

- Single-period observations. There are 549 instances in which a site reports piece handlings for a MODS activity for only a single period out of the 117 covered by the sample. "Improper data input by employees" in which the piece handlings are recorded under the wrong activity or for the wrong facility are a plausible explanation. *Id.* at 15602-603.
- Reporting gaps in the data sets. There are 641 single-period reporting gaps, 603 gaps of 2 to 6 periods and 577 gaps longer than 6 periods. A reporting gap occurs when an activity disappears at a site and reappears at a later date. Again, it is possible that the missing report was recorded for the wrong activity or for the wrong facility. It is also possible, as witness Neels suggests, that "the data simply did not make their way into the MODS system." *Id.* at 15603-604.
- Extreme high productivities. Witness Bradley conducts a "productivity" scrub of his data for each activity. The ratio of hours to piece handlings is computed for each facility and accounting period, then, the one percent tails of the distribution of these ratios are eliminated from his sample. "The eliminated observations clearly contained some extreme values, in some cases beyond what is considered physically possible. In those instances, I would conclude that the recorded observations were subject to some kind of data entry error." Tr. 11 5285.
- Extreme low productivities. "In other cases, productivity values were sufficiently low as to present strong evidence of misreporting." *Id.* at 5383.

A dirty data set presents an econometrician with a difficult problem. There are usually no good ways to separate the good observations from the bad. Leaving bad observations in the sample can introduce an attenuation bias in the estimates if errors remain in the observations of regressors such as piece handlings. On the other hand, eliminating extreme data points is likely to delete from the sample precisely those observations that are most helpful in revealing the behavior under study. Witness

Bradley's productivity scrub is exactly the kind of data elimination that econometricians try to avoid. Since the scrub eliminates extreme values that are accurate, as well as those that are erroneous, it leaves a sample that cripples the econometrics. The estimated equations are incapable of accurately representing behavior because all of the data needed to reveal responses under the most extreme circumstances has been systematically removed.

In addition, deleting observations from a sample may introduce a selection bias into any estimates derived from the sample. A selection bias occurs if the deletions convert a representative sample into one that is non-representative. Creating a selection bias for a specific purpose is known as "censoring" the sample and is universally regarded as unacceptable econometric practice. However, the introduction of a selection bias may not be intentional. Apparently objective scrubbings according to rules such as those applied by witness Bradley are perfectly capable of introducing a selection bias unintentionally, even when the rules seems innocuous.

Therefore, a dirty sample such as the MODS and PIRS panel data confronts the econometrician with problems that have many bad solutions and no good ones.

In their testimony in these proceedings both witness Bradley and witness Neels have recommended similar conservative practices for eliminating observations from a sample. First, witness Bradley. "Eliminating data from an analysis should only be done with great caution. On one hand, there should always be a presumption for using valid observations, even if the values for a particular observation are not typical of the rest of the data. On the other hand, if the data are from special cases, or do include data entry errors, their use could, potentially, lead to misleading results." And "care should be taken that only truly unrepresentative observations are removed." Tr. 28/15705-706. Now, witness Neels. "I believe in general that one needs to have a reason for dropping data from an analysis. I also believe, however, that this need is especially pressing when one wishes to drop a lot of the data ...." *Id.* at 15703. In oral testimony witness Neels emphasizes the need to understand the process that generated data that looked questionable in order to understand if apparent anomalies have an explanation, but

agreed that "if I had an external standard that I had confidence in, that could tell me that, ..., with certainty, that these data points represented impossible situations, then, under the circumstances, I probably would not want to include them in my analysis." *Id.* at 15800 and 15812. It is the Commission's understanding that good econometric practice requires that when data are removed from a sample, they are removed because the econometrician has investigated and found good cause for believing that the data are erroneous.

Witness Bradley's solution to the evident errors in the MODS and PIRS data is to scrub his samples. Scrubbing removes data from the sample according to a predetermined rule specified by the econometrician. Witness Bradley's scrubs apply rules to eliminate observations with the following characteristics:

- Ramping up. Observations are excluded for an operation at a site until the size of that operation was large enough to indicate that the activity was in the normal operating range. All observations are deleted for periods prior to the period in which piece-handlings reached thresholds of 100,000 piece handlings for letter and flat operations and 15,000 piece handlings for parcel and priority operations. No threshold scrubs are applied to the allied and BMC activities. Tr. 11/5453.
- Continuity. According to witness Bradley "Continuous data facilitate the estimation of accurate seasonal effects, secular non-volume trends, and serial correlation corrections." *See* USPS-T-14 at 31 and Tr. 11/5281-83. Observations are deleted that are not part of a consecutive sequence of at least 39 observations for the site. "This criterion ensures that seasonal patterns can be accurately identified and provides more than enough time for measurement of the response in cost to a sustained increase or decrease in volume." Tr. 11/5450. This scrub is applied twice, before and after the other scrubs. For allied operations the required length of the sequence is 26 accounting periods. *Id.* at 5475. If a site produces more than one sequence of at least 39 (or 26) observations, all but the most recent sequence is deleted. *Id.* at 5254.
- Productivity. Productivity is defined as the ratio of hours to piece handlings. The distribution of productivities in an activity at all sites is formed and all observations in the one percent tails at both ends of the distribution are deleted from the sample. *See* USPS-T-14 at 32. The purpose of the productivity scrub is to eliminate "[o]bservations in which there is an severe mismatch between hours and piece handlings. ..." Tr. 11/5510.

In addition, witness Bradley regards as erroneous all reports of zero values for hours or piece-handlings at a facility "after the activity is well-established." *See* USPS-T-14

at 30. Also, for allied operations an observation is deleted if an observation is missing or deleted for any sort operations, and, if any observations are deleted by the productivity scrub, then all data for the allied operation at that site are eliminated. *Id.* at 33.

The amount of data discarded by witness Bradley's scrubs is extraordinary. The numbers in Table F-1 are extracted from witness Neels' Table 4 "Data Eliminated Due to Data 'Scrubbing'" and from witness Bradley's responses to interrogatories. Tr. 28/15611 and Tr. 11/5446-49. On average 22.41 percent of the MODS and PIRS data is discarded because it is identified as either erroneous, atypical of normal operations, or not part of a suitable sequence. The smallest fraction discarded is 8.3 percent for BMC Sack Sorting. At the other extreme 48.83 percent of the sample is discarded for SPBS Priority Mail.

Table F-1
Observations Removed by Scrubbing

Activity	Description	Name	Usable Observations	Discarded Observations	Remaining Observations	Percent Discarded
Function 1						
1	BCS, BCS on OCR	bcs	26,426	3,402	23,024	12.87%
2	OCR	ocr	21,345	2,614	18,731	12.25%
3	SPFSM, FSM &FSM/BCR	fsm	21,544	3,382	18,162	15.70%
4	LSM, MPLSM, & SPLSM w/BCR	lsm	23,251	3,278	19,973	14.10%
7	SPBS - Non Priority	SPBS Oth	6,775	2,053	4,722	30.30%
8	SPBS - Priority	SPBS Prio	3,903	1,906	1,997	48.83%
9	Manual Flats	manf	28,504	4,215	24,289	14.79%
10	Manual Letters	manl	28,648	3,558	25,090	12.42%
11	Manual Parcels	manp	24,814	7,235	17,579	29.16%
12	Manual Priority	Priority	21,914	5,977	15,937	27.27%
13	LDC 15 - RBCS	LD15	1,898		1,898	
16	Cancellation & Mail Preparation - metered	1CancMPP	26,280	6,470	19,810	24.62%
18	Opening Unit - Preferred Mail	1OpPref	26,358	9,502	16,856	36.05%
19	Opening Unit - BBM	1OpBulk	20,817	6,380	14,437	30.65%
20	Platform	1Platform	26,356	8,704	17,652	33.02%
21	Pouching Operations	1Pouching	21,429	6,570	14,859	30.66%
29	Registry	Registry	32		32	
BMCs						
40	Platform	Platform	2,094	318	1,776	15.19%
41	Allied Labor & all other Mail Processing	Allied	2,094	435	1,659	20.77%
42	Primary Parcel Sorting Machine	PSM	2,094	196	1,898	9.36%
42	Secondary Parcel Sorting Machine	PSM	2,069	211	1,858	10.20%
43	Sack Sorting Machine	SSM	1,916	159	1,757	8.30%
44	Irregular Parcel Post	SPB	2,032	367	1,665	18.06%
44	Sack Opening Unit	SPB	2,094	511	1,583	24.40%
45	Non-Machinable Outside	NMO	2,094	267	1,827	12.75%
	Bulk Business Mail Letter Tray		753	254	499	33.73%
	Bulk Business Mail Flat Tray		569	248	321	43.59%
		Total	**346,781**	**77,710**	**269,071**	**22.41%**

The Commission regards witness Bradley's scrubs as both excessive and ineffective. They are excessive because they eliminate usable data without good cause, contrary to accepted conservative econometric practice. They are ineffective because the rules applied in the scrubs do not reliably identify erroneous observations from MODS and PIRS. It is also clear that witness Bradley's scrubs unduly affect the estimated variabilities in ways that indicate that the scrubs introduce a selection bias. The Commission regards data scrubs on the scale seen here no differently than it viewed choosing variables and time periods in Docket No. R87-1. An imaginative analyst can obtain almost any desired variability estimate by carefully choosing a scrub that creates a selection bias in the sample.

a. The Scrubs Are Excessive and Remove Data That Are Not Erroneous or Atypical

Witness Bradley's scrubs have been most severely criticized in this proceeding by UPS witness Neels. He examines the computer programs used to do the scrubbing, the data sets before and after scrubbing, and witness Bradley's explanations and defenses. None of witness Bradley's scrubs are well-designed for the purposes stated in witness Bradley's testimony, and, in most cases, the stated purposes are inadequate excuses for deleting large amounts of data.

Witness Bradley's "ramping up" scrub does not just eliminate observations during ramping up as witness Neels discovers. "Examination of the computer programs used to do the 'scrubbing' had indicated that this step in the process had eliminated not just observations corresponding to the first periods in which an activity was present at a facility, but also long runs of observations in the middle of the reporting periods for some established sites." Tr. 28/15609 (n.13). Witness Bradley's ramping up scrub actually eliminates all of the observations involving low levels of piece handlings. Without these observations in the sample there is no reason to believe that witness Bradley's estimates are applicable to activities when they are run at low levels. Witness Neels examination of the MODS and PIRS data reveals "sites that exhibit low levels of piece handlings over

extended periods of time." *Id.* at 15613. Ramping up new activities and operating activities at low levels for extended periods of time are perfectly normal aspects of mail processing operations at Postal Service facilities. Therefore, the Commission finds that witness Bradley's ramping up scrub is unjustified and excessive.

Witness Bradley's stated reasons for his "continuity" scrub do not provide any basis for the 39 and 26 period spans used in this scrub. The stated reasons for the scrub are "Continuous data facilitate the estimation of accurate seasonal effects, secular non-volume trends, and serial correlation corrections." *See* USPS-T-14 at 31 and Tr. 11/5254. However, witness Neels points out that "In order for a data point to be included in the estimation of his fixed effects model with serial correlation, it is necessary only that complete data be available for three consecutive accounting periods." Tr. 28/15615. Estimation of the seasonal dummy coefficients or the coefficients associated with witness Bradley's segmented trends do not require sequential data at all. Witness Bradley's decision to use 39 and 26 periods in the continuity scrub appears arbitrary to the Commission. It is the continuity scrub that accounts for most of the discarded data. Tr. 11/5446-49. The Commission finds that the continuity scrub is inappropriate and excessive when the data set is used to fit models that require only three periods of continuity in the data. In fact, a 39 period continuity scrub might be considered appropriate for fitting models to relate piece-handlings and processing labor time over a rate cycle. However, there is nothing in the testimony of Postal Service witnesses to indicate that the data was ever used to fit such models.

Witness Bradley's stated reason for the productivity scrub is to eliminate data entry errors. Apparently all of the observations eliminated by this scrub are considered "subject to some type of data entry error" by witness Bradley. *Id.* at 5285. However, witness Neels points out that the productivity scrub actually eliminates observations that are unusual for any reason. Among the observations eliminated by the productivity scrub would be data that "were in fact recorded correctly but look unusual even though they are normal for that site." Tr. 28/15612. It is clear to the Commission that witness Bradley's productivity scrubs remove the observations in the arbitrarily-determined one percent

tails of the productivity distributions, whether they contain data entry errors or not. The only persuasive evidence provided by witness Bradley that the productivity scrub removes data subject to data entry error is his testimony that some of the reported productivities are plainly beyond the capacity of the machines and personnel at the site. The Commission shares witness Neels's suspicion that much of the deleted data is merely unusual and not erroneous.

Although the number of observations eliminated by the productivity scrub is not as large as the observations eliminated by the other scrubs, the elimination of unusual observations is of particular concern. It is the Commission's understanding that deleting observations solely because they are unusual is not considered good econometric practice for the following reason given by witness Neels. "It is very possible that such 'unusual' observations contain the most information about the true relationship between cost and volume. A site that has experienced an enormous increase in volume may well be unusual, but it may also provide the clearest possible picture of how processing costs vary with volume." *Id.* at 15613. In brief, unusual observations contain more useful statistical information than observations that are closer to the mean. A perfectly average observation contains little useful information and can be deleted from a sample without much effect.

Along the same lines, econometricians are reluctant to extrapolate econometric results far beyond the ranges of values for the variables in the sample. Clearly, eliminating unusual observations can seriously reduce the useful range of values for the variables over which a fitted model can safely be used. When witness Bradley eliminates the observations in the extreme tails of the distributions of productivity, he sacrifices any possibility of accurately describing costs for facilities operating in these regions.

b. The Scrubs Are Ineffective and Do Not Remove All of the Erroneous Data

Witness Bradley's scrubs will eliminate erroneous observations from the sample only when the errors reveal themselves as piece handlings below the ramping up threshold,

as part of a sequence of continuous observations that is less than 39 (or 26) periods long, or as productivities that put the observations in one of the extreme one percent tails of the productivity distribution. Clearly, some errors are revealed and eliminated by the scrubs but other errors, not detected by the tests, can remain in the sample. The scrubs offer no guarantee that all of the errors will be detected. For example, there is no certainty that the 66 percent error cited by witness Neels from the Inspection Service report does not remain in the sample used by witness Bradley to fit his recommended model.

Errors in piece handlings for manual activities resulting from incorrect conversion factors were a particular concern of the Inspection Service report. There does not appear to the Commission to be anything about witness Bradley's scrubs that would detect such errors in manual piece handlings except accidentally. Also, it would make more sense to screen the MODS and PIRS data for errors of any kind before it is aggregated into witness Degen's cost pools.

It is impossible to judge with precision how much error remains in the sample after witness Bradley's scrubs. However, witness Bradley's rebuttal testimony includes a table showing the variance of total piece handlings and an estimate of the variance of the measurement error in total piece handlings for manual letter and manual flat sorting. Tr. 33/17900. The standard deviations for total piece handlings (TPH) derived from the variances in Table 3 are 0.268 for manual letters and 0.297 for manual flats. The corresponding standard deviations for the measurement error are 0.123 for manual letters and 0.068 for manual flats. These results do not support the conclusion reached by witness Bradley that large and material measurement errors are absent from the piece handling data for these activities. *Ibid.* In the Commission's opinion these results are inconclusive but tend to support exactly the opposite finding, that large measurement errors remain in the sample after witness Bradley's scrubs.

5. Controls Issues

Witness Bradley's model includes several collections of variables as controls. These controls are all treated as nonvolume-variable when he derives elasticities from his translog equations. This assumption is required by the mathematics that allows witness Bradley to derive his variabilities by fitting the translog equations to mean-centered data and, then, simply summing the coefficients of the first-order coefficients for lagged and unlagged piece handlings.

Somewhat different controls appear in the different versions of the model that witness Bradley specifies for different mail processing activities. For example, the version of the model shown for direct activities at MODS facilities on page 36 of his direct testimony includes the following controls: (1) seasonal dummy variables for accounting periods 2 through 13 in the postal year, (2) the natural logarithm of the manual ratio, MANR, defined for letters as "the ratio of manual letter TPH to the sum of all manual letter TPH, mechanized letter TPH, and automated TPH" (the manual ratio for flats is similarly defined), (3) the two components, t_1 and t_2, of a segmented trend (t_1 is the time trend from 1988 through 1992 and t_2 is the trend from 1993 through 1996), and, (4) for the fixed effects model he recommends, a set of dummy variables, α_i, one for each of the facilities in the sample. The model for BMC activities has an almost-identical set of controls. The only difference is in the seasonal dummies. For BMC activities, witness Bradley specifies only two "one for the Christmas peak and one for the summer trough." USPS-T-14 at 47. The model for allied activities at MODS facilities omits the manual ratio for either letters or flats and includes only the Christmas and summer trough seasonals.

Witness Bradley's models include the natural logarithms of total piece handlings, TPH, and lagged TPH as explanatory variables in addition to the controls. All of the translog equations are fit to mean-centered data. The reason given is "to facilitate the calculation of the cost elasticity" and "the cost elasticity or variability is just the first order term on TPH." *Id.* at 36. An assumption that is critical to this derivation of the elasticities

is that none of the control variables are themselves volume-variable. This becomes clear from the oral testimony of UPS witness Neels.

> CHAIRMAN GLEIMAN: "If an estimated coefficient is not used to calculate elasticity, does it constitute an assumption that the variable is not influenced by the volume directly or indirectly?"
>
> THE WITNESS: "I believe that's correct."

Tr. 28/15794-95.

It is also clear from the mathematics. [5]

Witness Bradley rigorously maintains throughout his direct testimony, interrogatory responses and rebuttal testimony that all of the control variables found in his model are not measuring effects on hours from a sustained increase in volume.

With respect to the seasonal dummies: "The seasonal dummies do not include volumetric effects. Rather, they account for the seasonal variations in hours and volume that occur because of the seasonal patterns in mailings." Tr. 11/5336.

With respect to the manual ratio: "The manual ratio is affected by changes in the degree of mail sorted on automated and mechanized equipment. For example, as a site

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[5] Define lnH = natural logarithm of hours
ln D = natural logarithm of the driver
X = a control variable
All variables are mean-centered so:

$$\ln\bar{H} = \ln\bar{D} = \bar{X} = 0$$

The translog equation is:

$$\ln H = \alpha + \beta_1 \ln D + \beta_2 (\ln D)^2 + \beta_3 X + \beta_4 X^2 + \beta_5 (\ln D) X$$

$$\frac{d\ln H}{d\ln D} = \beta_1 + 2\beta_2 \ln D + \beta_5 X + [\beta_3 + 2\beta_4 X + \beta_5 \ln D]\left(\frac{dX}{d\ln D}\right)$$

Evaluated at the mean and with dlnD = dD/D.

$$\frac{d\ln H}{d\ln D} = \beta_1 + \beta_3\left(\frac{dX}{dD}\right)D.$$

Assume that the control is <u>not</u> volume variable, i.e., $\frac{dX}{dD} = 0$.

Then, $\frac{d\ln H}{d\ln D} = \beta_1$.

sorts more mail on automated equipment, the percentage of its total mail which is sorted manually will decline. Consequently, the manual ratio will decline. Because the manual ratio is the percentage of volume sorted manually, it is not affected by volume, but by the way that the volume is sorted. The manual ratio has changed over time and it is different across facilities." *Id.* at 5515. "The manual ratio is included in the equations to capture possible variations in the conditions in mail processing activities associated with the automation of the letter and flat mail streams. These conditions, are not associated with variations in volume, per se, but with a modification in the way that volume is processed. ... The manual ratio variable is intended to capture changes in the operating environment that occur due to changing mail processing methods, not changes in volume. It is for this reason that it reflects non-volume effects." *Id.* at 5335.

With respect to the segmented trend: "In my analysis, hours are the dependent variable so an autonomous time trend captures the autonomous growth (or decline) in hours. Thus, in my equations, the time trend's coefficient measures the rate of growth (or decline) in hours *not* attributable to increases (or decreases) in piece handlings." USPS-T-14 at 14 (emphasis in original). "If the trend term was not included, the estimation of the volume variability would be confounded with the effects of the autonomous trend." Tr. 11/5337.

With respect to the fixed effects dummies: "As explained on page 40 of my testimony, the fixed effects method includes a set of site-specific dummy variables that are used to control for non-volume site-specific effects." *Id.* at 5316-17. The explanation found on page 40 is "α_i^* represents a vector of facility-specific effects that cause hours to vary across sites for the same amount of TPH. My experience in studying mail processing activities strongly suggests that there are significant non-volume variations across facilities. The ages and sizes of facilities vary widely across the postal network; some facilities are in urban areas other are not. In fact, in previous work I found that non-volume variations in facility characteristics have an important impact on productivity." USPS-T-14 at 40-41 (footnote omitted).

However, the testimony in this proceeding indicates that the control variables appearing in witness Bradley's translog equations are not entirely invariant with volume as he has assumed. This testimony provides a basis for the finding that the manual ratio for letters or flats, and the fixed effects dummies are both responsive to volume.

Witness Bradley provides the correct general interpretation of linear regression coefficients in his response to P.O. Information Request No. 7. "[T]he coefficients are interpreted as the effect of a given right hand side variable on the dependent variable, holding the values of all other right-hand-side variables constant." Tr. 19E/9739. The coefficients for piece handlings in his models are partial derivatives. They represent the effect of piece handlings on processing time with the manual ratio and fixed effects *held constant*. It does *not* mean that the estimated coefficients for the manual ratio and the fixed effects somehow prevent processing time from responding to changes in the manual ratio or in the fixed effects that may be indirectly caused by piece handlings. The only way that the coefficient estimates for the manual ratio and the fixed effects could do this would be if they came out to be zero.

Witness Bradley's estimated equations do not econometrically separate effects on mail processing labor time into those effects that are related to piece handlings and those effects that are unrelated to piece handlings. The fitted equations would perfectly isolate the effects due to piece handlings only if piece handlings and the controls in witness Bradley's equations were orthogonal (uncorrelated). Actually, witness Bradley's fitted equations separate effects on processing time into those effects that operate directly through the piece-handling variables and all other effects, including indirect piece handling effects, that work through the controls. Any piece handling effects that work indirectly on mail processing labor time through the controls operate through the estimated coefficients for the controls and not through the estimated coefficients for total piece handlings.

a. Manual Ratios Are Volume Variable

That the manual ratios for letters and flats are volume variable is evident from their definitions. The ratio of manual piece handlings to total piece handlings has nonzero partial derivatives with respect to all of its components.[6] Therefore, the manual ratio is volume-variable with respect to manual, automated and mechanized piece handlings except, possibly, under some special conditions not described in the testimony of Service witnesses.

The manual ratio links the processing labor time in one activity to piece handlings in several activities. If total piece handlings for manual, automated and mechanized letter sorting activities had been included together in the equations for letter processing activities, there would be no need to include the hybrid manual ratio. For this reason witness Bradley drops the manual ratios from the equations for allied activities. "[B]ecause I allow each technology to influence allied labor separately, I do not include the manual ratio term in the allied equations." USPS-T-14 at 37-38. The equations for allied labor hours include, individually, all of the piece handling terms that appear in his manual ratios for letters and flats. These are:

TPH_{AL} automated letter piece handlings
TPH_{EL} mechanized letter piece handlings
TPH_{ML} manual letter piece handlings
TPH_{EF} mechanized flat piece handlings
TPH_{MF} manual flat piece handlings

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[6] Let D_m = Manual piece handlings.
D_a = Automated and mechanized piece handlings

$$MANR = \frac{D_m}{D_m + D_a}.$$

$$\frac{\partial MANR}{\partial D_m} = \frac{1}{D_m + D_a} - \frac{D_m}{(D_m + D_a)^2} = \frac{D_a}{(D_m + D_a)^2}$$

$$\frac{\partial MANR}{\partial D_a} = -\frac{D_m}{(D_m + D_a)^2}.$$

Witness Smith's testimony reflects the proper economic view of piece handlings. They are actually the intermediate outputs of joint production activities at the Postal Service's mail processing facilities. One of witness Smith's major points is that witness Bradley's model for all-but-allied activities, "treats the activities as independent of one another." "This approach ignores key relationships among activities within the facility, *i.e.*, how demands for various types of postal products and usage of various activities interact to affect labor usage." Tr. 28/15830. Part of the reason this criticism of witness Bradley has force is witness Bradley's assumption that the manual ratios are not volume-variable. Without this assumption mail processing activities are interrelated through these ratios. For example, an increase in automated letter piece handlings will decrease the manual ratio for letters, thus affecting mail processing labor hours in mechanized and manual operations.

Appearing before the Commission, UPS witness Neels also noticed that the manual ratios must be related to volumes. When asked by Chairman Gleiman if it is plausible to assume that the manual ratio is not influenced by volume directly or indirectly, witness Neels replied "I'm not sure that it is." When asked "Should the coefficient of manual ratio be used in elasticity calculation given that TPH is a determinant of manual ratio?" witness Neels replied "If TPH across activities, *which would have to be the case*, is a determinant of the manual ratio, then that contribution to volume variability should be taken into account." Tr. 28/15795 (emphasis added).

Some of witness Bradley's own descriptions of mail processing suggest interrelationships between the labor hours and piece handlings for different activities. "[A] large volume permits dedication of the same workers to an activity on a regular basis. This regularity increases their familiarity with the activity and, as a result, their efficiency. This type of economy seems most applicable to manual activities." USPS-T-14 at 56. Witness Bradley's description of manual activities as "backstop technologies" describes how the manual ratio will increase as volumes rise where manual activities serve as the "backstop". "In an automated environment, manual activities will serve as the backstop technology and these activities will be staffed so that they are available to sort the mail

that cannot be finalized on automated equipment. In this way, the manual sorting activities serve as a form of insurance against service failures, but at the cost of lower piece productivity. Productivity, in addition, will rise as volume rises and the activity is used more regularly." *Id.* at 58 (footnote omitted).

Finally, witness Degen's testimony shows that volumes in almost every subclass contribute piece handlings to the manual, mechanized and automated total piece handlings that determine the manual ratios. *See* USPS-T-12, Table 5. It is also apparent that the subclasses contribute pieces at rates that are relatively different. So an increase in the volume of any single subclass will increase manual, mechanized and automated total piece handlings somewhat disproportionately. As a result the manual ratio will respond to the increase in volume. That the manual ratios are correlated with piece handlings for optical character readers (ocr), barcode scanners (bcr), letter sorting machines (lsm), and flat sorting machines (fsm), is evident from correlations supplied by witness Bradley in response to interrogatories. *See* Tr. 11/5534-35. One cannot prove causality with correlations. However, these correlations are fully consistent with the Commission's finding that witness Bradley's manual ratios are volume-variable.

b. Fixed Effects Are Volume-Variable

"Fixed effects" is just a technical way of saying that each facility is allowed to have its own intercept or constant term in the translog equations that witness Bradley fits for mail processing labor time. The differences in these intercepts will capture *any* differences between average processing labor times at different facilities that are not captured by differences in the sample means of the other variables of the translog equations, including the sample means of the terms containing total piece handlings at the facilities. But this does not mean that the differences in the intercepts are completely unrelated to piece handlings. Nor is it possible for the fixed effects to control for differences between the facilities that are not fixed over time. Consequently, the fixed effects are far from an ideal set of controls.

Formally, the fixed effects model could be estimated by inserting a dummy variable for each facility in the translog equation and then fitting by least squares. Since there are a fairly large number of such dummy variables, one for each facility, this is a clumsy way to proceed with the computations. An easier alternative that is exactly equivalent is to sweep the fixed effects out of the model by computing the facility means of the remaining variables in the model and then subtracting these facility means from the observations.[7] Witness Bradley considers it "computationally inconvenient to recover the site-specific dummy coefficients." Tr. 11/5317. However, the estimator for the fixed effects (shown in footnote 9) shows that the fixed effects will include all of the difference between the average labor processing times for the facilities that is not captured by differences in the averages for piece handlings and the controls. There is nothing about the estimator for the fixed effects that prevents them from reflecting volume-variable indirect effects at the facility level.

The fixed effects in witness Bradley's recommended model may represent effects that are both related and unrelated to postal volumes. In his explanations and interpretations of the fixed effects witness Bradley typically only cites effects that are unrelated to volume. These effects include "the age of the facility," "the quality of the local work force," "the quality of the mail that the facility must process," "extraordinarily good weather," "highly motivated workers," "size of facilities" and location in "urban areas." *See* USPS-T-14 at 40 and Tr. 11/5317.

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[7] Witness Bradley's fixed effects model is:

$$Y_{iT} = \alpha_i^* + X_{iT}\beta + \zeta_{iT}.$$

Let $\bar{Y}i = \sum_T Y_{iT}/N_i$ and $\bar{X}i = \sum_T X_{iT}/N_i$ where the summations are taken over all N_i observations for facility i. Assume $\sum_T \zeta_{iT} = 0$. Then, $\bar{Y}i = \alpha_i^* + \bar{X}i\beta$. Subtracting the facility means from the Y_{iT} and X_{iT} "sweeps out" the fixed effects:

$$Y_{iT} - \bar{Y}i = (X_{iT} - \bar{X}i)\beta + \zeta_{iT}.$$

Differences between the mean labor hours for the facilities that are not captured by the estimated slope are found in the fixed effects since $\hat{\alpha}_i^* = \bar{Y}i - \hat{\beta}\bar{X}i$ is the estimator for α_i^*. This method of fitting the fixed effects model is described in George G. Judge et al, The Theory and Practice of Econometrics, 2nd edition, pp. 530-533.

But "size of facilities" is determined by the Postal Service in ways that are related to volume. Witness Neels' oral testimony makes this clear.

> CHAIRMAN GLEIMAN: "Would you expect size differences to be due in part to differences in TPH levels among facilities?"
>
> THE WITNESS: "Well, ultimately, the size of the facility should be a reflection of the total amount of activity going on within it, so I would expect it to be related."

Tr. 28/15796. Among the effects captured crudely by witness Bradley's fixed effects are the capital allocations made by the Postal Service to its mail processing facilities.

Witness Smith's list of the effects imbedded in the fixed effects coefficients includes several cited by witness Bradley but also includes a number of other effects that are volume-related. Witness Smith's list is "the age of the facility, the magnitude of the facility support costs, the size of the facility (square feet of space and/or number of people employed), the space utilization, the number of processing activities, the types of mail processing equipment, the value of the equipment located within a facility, and the quality of the work force." *Id.* at 15851. Many of these effects are capital-related. As the Postal Service changes the floor space, building structures and equipment at its mail processing facilities it is operating to change the fixed effects within witness Bradley's model. Witness Smith's testimony shows that as volume increases, the Postal Service's labor processing costs may be explained as movements along an expansion path rather than along the short-run cost functions by witness Bradley. Movements along the expansion path occur when the Postal Service alters the mostly capital-related factors that determine the sizes of the fixed effects at its different facilities. In witness Smith's words "[t]he relevant measurement of cost incidence should focus on the expansion path reflecting expansion or contraction of the scale of the facility in the foreseeable future, as incremental labor is altered *or additional capital equipment installed* as a result of the Postal Service's ongoing capital expansion." *Id.* at 15841(emphasis added). When

"capital expansion" is a response to volume growth, the fixed effects are volume-variable.

If the fixed effects are volume variable, then witness Bradley's volume variabilities are incorrect. This is pointed out in the oral testimony of witness Neels. "If a relationship can be established between volume and the fixed effects coefficients, then I think that indirect effect should also be incorporated into the overall estimate of the relationship between volume and cost." *Id.* at 15796. Witness Neels testimony shows why such a relationship is likely to exist. "If you have large and systematic differences between facilities in size such that the variation over time in volumes for a facility is small in relation to the level, it wouldn't surprise me if much of the level effect went into the fixed effects coefficient." *Ibid.* Witness Neels also finds evidence of the relationship in the estimates for the pooled and fixed effects models made by witness Bradley "among the results that are in the record, the fact that when one eliminates the fixed effects coefficient, the volume variability goes up suggests that that's happening, that that's part of the explanation for that change or that difference in estimated variabilities between the pooled model and the fixed effects model." *Id.* at 15797.

Witness Bradley concedes in his response to P.O. Information Request No. 7 that the fixed effects for his recommended model are correlated with volume. However, he continues to claim that they are not volume-variable because "correlation does not imply causation. ... [t]he fact that the fixed effects and volume are correlated does not imply that volume causes the fixed effects." Tr. 19E/9738. This is the same defense used for years by the tobacco companies to deny the relationship between cigarette smoking and lung cancer. While it is true that correlations between the incidence of lung cancer and smoking cannot *prove* that smoking causes lung cancer, there is no sensible way that lung cancer could cause smoking and there are no good candidates for other agents that could jointly cause both smoking and lung cancer. Similarly here, there is no reasonable way that the fixed effects could affect volumes and there are no good candidates for other factors that would jointly affect both the fixed effects and volumes. By far the most

likely explanation for the observed correlation between volume and the fixed effects is that the fixed effects are partly caused by site-related differences in volume.

Test Year Volume, Cost , Revenue, and Cost Coverage by Class
at Commission Recommended Rates

	Volume (000)	Attributable Cost ($ 000)	Revenue ($ 000)	Contribution to Institutional Cost ($ 000)	Cost/Pc. (Cents)	Rev./Pc. (Cents)	Contribution to Institutional Cost/Pc. (Cents)	Cost Coverage	Change in Rev./Pc.
First-Class Mail:									
Letters 1/	95,734,744	19,410,085	33,454,378	14,044,293	20.275	34.945	14.670	172.4%	1.7%
Cards	5,691,941	705,860	1,062,311	356,451	12.401	18.663	6.262	150.5%	0.2%
Priority Mail 1/	1,058,587	2,419,607	4,019,575	1,599,968	228.570	379.712	151.142	166.1%	5.6%
Express Mail	59,258	730,059	829,118	99,059	1,232.011	1,399.178	167.167	113.6%	8.1%
Mailgrams	4,761	667	4,680	4,113	11.909	98.301	86.392	828.5%	0.0%
Periodicals:									
Within County	963,995	88,291	88,777	486	9.159	9.209	0.050	100.5%	1.1%
Regular Rate	7,145,748	1,883,004	1,899,266	16,261	23.553	23.780	0.228	101.0%	4.6%
Nonprofit	2,147,001	352,693	356,110	2,417	16.427	16.540	0.113	100.7%	8.0%
Classroom	45,350	12,498	10,467	(2,031)	27.559	23.079	(4.479)	83.7%	12.1%
Standard Mail (A):									
Regular	37,858,285	5,956,215	8,017,298	2,061,083	15.733	21.177	5.444	134.6%	1.2%
Enhanced Carrier Route (ECR)	28,759,024	2,108,422	4,280,273	2,171,851	7.331	14.883	7.552	203.0%	2.2%
Nonprofit	10,550,230	1,170,702	1,331,075	160,373	11.096	12.617	1.520	113.7%	9.6%
Nonprofit ECR	2,591,051	135,690	194,080	58,390	5.237	7.490	2.254	143.0%	-10.4%
Standard Mail (B):									
Parcel Post	215,784	685,910	740,510	54,600	317.869	343.173	25.303	108.0%	12.3%
Bound Printed Matter	575,065	397,175	524,849	127,674	67.327	91.268	23.941	135.6%	5.0%
Special Rate	206,671	311,952	329,349	17,497	150.893	159.359	8.466	105.6%	-9.7%
Library Rate	29,856	60,221	49,424	(10,797)	201.707	165.543	(36.164)	82.1%	3.7%
USPS Penalty Mail	298,093								
Free-for-the-Blind Mail	66,427	36,654		(36,654)	64.958				
International Mail 2/	1,006,743	1,312,380	1,643,844	331,464	130.359	163.283	32.924	125.3%	3.0%
Total All Mail	194,998,613	37,567,885	58,634,383	19,845,043	19.266	30.069	9.664	156.1%	2.6%
Special Services:									
Registry	15,178	86,937	107,320	20,383	572.795	707.093	134.298	123.4%	24.6%
Insurance	30,247	47,223	68,320	21,097	156.123	225.872	69.749	144.7%	9.5%
Certified	296,534	369,180	415,147	45,967	124.498	140.000	15.501	112.5%	3.7%
COD	3,887	18,880	18,963	83	485.724	487.867	2.143	100.4%	11.4%
Money Orders	241,071	156,798	230,282	73,484	65.042	95.525	30.482	146.9%	-4.9%
Stamped Cards	590,659	4,746	5,907	1,161	0.804	1.000	0.196	124.5%	N/A
Stamped Envelopes	460,000	14,413	14,557	144	3.133	3.165	0.031	101.0%	-1.3%
Special Handling		1,312		(1,312)					
Box/Caller Service	15,147	595,268	652,537	57,269	3,929.926	4,308.014	378.088	109.6%	10.7%
Bulk Parcel Return Service	4,783	6,261	8,370	2,109	130.907	175.001	44.094	133.7%	N/A
Packaging Service	2,467	27,756	43,075	15,319	1,125.000	1,745.895	620.894	155.2%	N/A
Delivery Confirmation	74,102	22,139	23,703	1,564	29.878	31.987	2.110	107.1%	N/A
Other Special Services 3/			350,799	350,799					
Other Costs		211,180		(211,180)					
Other Income			202,733	202,733					
Total Mail & Services	194,998,613	39,129,978	60,776,096	19,424,862	20.067	31.167	9.961	155.3%	2.8%
Institutional Costs		21,364,615							
Prior Years Loss Recovery		377,063							
Appropriations			67,498						
Investment Income			47,762						
Total Revenue Requirement		60,871,656							
Total Revenues			60,891,356						
Net Surplus (Loss)			19,700						

1/ The changes in revenue per piece for First-Class letters and Priority Mail do not reflect the volume migration due to the recommended increase in the maximum weight of First-Class Letters

2/ Not subject to PRC jurisdiction.

3/ Revenues from the following special services are included in Other Special Services: Restricted Delivery, Return Receipt, Address Changes for Election Boards, Correction of Mailing Lists, Merchandise Return, On-Site Meter Setting, Permit Imprint Fee, and Zip Coding of Mailing Lists.

Schedule 2

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

FIRST CLASS		Units (000)		**Rate** (cents)	Revenues (000)	
Letters & Sealed Parcels						
Regular						
First-ounce		53,182,416		33.0	$17,550,197.3	
Additional ounce		18,459,676		22.0	4,061,128.7	
Nonstandard		315,165		11.0	34,668.2	
Prepaid Reply Mail		776,382		30.0	232,914.6	
QBRM		144,462		30.0	43,338.6	
Revenues from rates					21,922,247.4	
Fees	Address Correction		14,437.8			
	Business Reply		119,504.0			
	Certificate of Mailing		3,403.2			
	Prepaid Reply Mail		4,227.7		141,572.8	
Subtotal - volumes & revenues		53,182,416				$22,063,820.2
Presort Letters						
First-ounce		5,086,358		30.5	1,551,339.2	
Heavy-Piece Discount		157,293		(4.6)	(7,235.5)	
Additional Ounces		711,424		22.0	156,513.3	
Nonstandard Surcharge		27,156		5.0	1,357.8	
Revenues from rates					1,701,974.8	
Fees	Address Correction		1,357.3			
	Business Reply		0.0			
	Certificate of Mailing		70.2			
	Presort Permit		707.0		2,134.6	
Subtotal - volumes & revenues		5,086,358				1,704,109.4
Total Regular Letters		**58,268,774**				**23,767,929.6**
Automation						
Letters						
First Oz., Light Pieces		34,452,787		27.0	9,302,252.4	
First Oz., Heavy Pieces		116,394		22.4	26,072.4	
Total First Oz., Letters		34,569,181				
3-Digit Presort		20,806,858		(0.9)	(187,261.7)	
5-Digit Presort		9,465,395		(2.7)	(255,565.7)	
Additional Ounces		1,319,713		22.0	290,336.9	
Flats						
First Oz., Light Pieces		157,079		30.0	47,123.8	
First Oz., Heavy Pieces		134,328		25.4	34,119.2	
Total First Oz., Flats		291,407				
3/5-Digit Flats		242,278		(3.0)	(7,268.3)	
Additional Ounces		11,125		22.0	2,447.4	
Nonstandard Pieces		48,901		5.0	2,445.1	
Carrier Route Letters						
First Oz., Light Pieces		1,682,291		23.8	400,385.2	
First Oz., Heavy Pieces		2,247		19.2	431.5	
Total First Oz.		1,684,538				
Additional Ounces		71,066		22.0	15,634.4	
Revenues from Rates					9,671,152.6	
Fees	Address Correction		9,752.3			
	Business Reply		0.0			
	Certificate of Mailing		504.5			
	Presort Permit		5,039.4		15,296.2	
Total Automation Letters		**100,730,328**				**9,686,448.8**
Total First-Class Letters		**158,999,102**				**$33,454,378.4**

Single Piece Letter Adjustments

	First Ounce	Add'l Ounces	Nonstandard Pieces
Delivery Confirmation	(33,777)	(265,715)	0
Standard A Single Piece	150,693	309,271	1,428
Increase in Max. Weight for 1st Class	107,353	1,217,310	0

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

			Units (000)		Rate (cents)	Revenues (000)	
FIRST CLASS (con)							
Regular Cards							
Stamped Cards			590,659		20.0	$118,131.8	
Single-Piece		2,438,289					
Card Rate			2,324,627		20.0	464,925.4	
Letter Rate			113,662		33.0	37,508.5	
Prepaid Reply Mail			59,069		18.0	10,632.4	
QBRM			49,584		18.0	8,925.1	
Revenues from rates						640,123.2	
Fees	Address Correction			837.3			
	Business Reply			6,421.0			
	Certificate of Mailing			197.4			
	Prepaid Reply Mail			890.6		8,346.3	
Subtotal - volume & revenue			2,546,942				$648,469.5
Presort Cards							
Cards			657,862		18.0	118,415.2	
Fees	Address Correction			175.6			
	Business Reply			0.0			
	Certificate of Mailing			9.1			
	Presort Permit			87.0		271.7	
Subtotal - volume & revenue			657,862				118,686.9
Total Regular Cards			**3,204,804**				**767,156.3**
Automation Cards							
Basic Presort			349,056		16.6	57,943.3	
3-Digit Presort			858,442		15.9	136,492.3	
5-Digit Presort			557,943		14.6	81,459.7	
Carrier Route Presort			131,037		14.1	18,476.2	
Revenues from rates						294,371.5	
Fees	Address Correction			506.1			
	Business Reply			0.0			
	Certificate of Mailing			26.2			
	Presort Permit			250.9		783.2	
Total Automation Cards			**1,896,478**				**295,154.7**
Total First-Class Cards			**5,101,282**				**1,062,311.0**
TOTAL FIRST-CLASS MAIL			**164,100,384**				**$34,516,689.4**

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

PRIORITY Mail

	Pieces		Revenues	
Local, 1, 2, 3, Zones	550,422,325		$1,954,610,208	
Zone 4	141,107,453		522,441,271	
Zone 5	146,297,106		554,946,885	
Zone 6	85,289,580		333,180,604	
Zone 7	62,370,138		253,031,054	
Zone 8	124,958,849		554,290,961	
Subtotal	1,110,445,451		$4,172,500,983	
	times revenue adjustment		1.000539	
Revenue from rates			$4,174,749,961	
Pickup revenues			2,159,687	
FEES				
Address Correction	$63,900			
Business Reply	498,600			
Certificate of Mailing	314,600			
		Total Fees	877,100	
Total Revenue before Adjustments			**$4,177,786,748**	**

Adjustments:	**volume**	**revenue**
Delivery confirmation	46,721,000	156,785,050
Packaging service	823,498	3,098,211
Eliminate Stnd B single piece	7,948,000	25,433,600
Increase 1st Class maximum weight	(107,352,000)	(343,526,400)
	(51,859,502)	**(158,209,539)**

TOTAL VOLUMES & REVENUES	**1,058,585,949**	**$4,019,577,209**

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

EXPRESS Mail	Pieces (000)		Revenues (000)
Same day service	0		$1.3
Next day - P.O. to Addressee	59,022		800,760.0
Next day - P.O. to P.O	268		8,526.4
Customer designed	623		24,300.4
TOTAL DOMESTIC SERVICES	59,913		833,588.1
Pickup and delivery revenues			4,692.0
Revenue before adjustments			$838,280.1
Adjustments	**volume**	**revenue**	
Delivery confirmation	(728.0)	($10,185.9)	
Packaging service	73.2	1,024.0	
total adjustments	**(654.8)**		**($9,161.9)**
TOTAL EXPRESS MAIL Volumes & Revenues	**59,258.2**		**$829,118.2**
Mailgrams	4,761		$4,680.0

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

PERIODICALS - Within County

	Rate (cents)	Pieces (000)	Pounds (000)	Revenues (000)	
Piece Rate Revenue					
Basic Presort	9.5	154,492		$14,676.8	
3-Digit Presort	8.8	41,050		3,612.4	
5-Digit Presort	8.0	112,227		8,978.2	
Carrier Route Presort	4.3	656,226		28,217.7	
		963,995			
Pound Rate Revenues					
Regular	13.3		172,277	22,912.8	
Delivery Office	10.7		109,713	11,739.3	
Piece Discounts					
125-piece walk sequence	(1.4)	49,996		(699.9)	
Saturation	(1.8)	29,157		(524.8)	
Delivery office entry	(0.4)	330,062		(1,320.2)	
Automation Discounts for Automation Compatible Mail					
from Required:					
Pre-barcoded letters	(6.2)	265		(16.4)	
Pre-barcoded flats	(4.6)	891		(41.0)	
from 3-Digit:					
Pre-barcoded letters	(4.7)	306		(14.4)	
Pre-barcoded flats	(2.4)	1,005		(24.1)	
from 5-Digit:					
Pre-barcoded letters	(3.5)	1,377		(48.2)	
Pre-barcoded flats	(2.1)	11,095		(233.0)	
Revenue from Rates				87,215.2	
Times Correction Factor		0.9953284			$86,807.7 *
Fees					
Address Correction				71.8	
Periodicals Application				1,896.8	
Total Fees					1,968.6 *
TOTAL PERIODICALS -Within County					**$88,776.3** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

PERIODICALS - Nonprofit

			Rate (cents)	Pieces (000)	Pounds (000)	Revenues (000)	
Pound Rate Revenue							
Advertising							
	Delivery Office		15.5		135	$20.9	
	SCF		17.8		28,366	5,049.2	
	Zone:	1 & 2	21.5		17,888	3,846.0	
		3	22.9		12,806	2,932.5	
		4	26.3		20,951	5,510.2	
		5	31.6		23,889	7,549.0	
		6	37.1		8,345	3,096.1	
		7	43.8		6,643	2,909.5	
		8	49.5		6,734	3,333.1	$34,246.5
Nonadvertising			15.6		452,272		70,554.5
Advertising - Commingled							
	Delivery Office		15.5		0	0.0	
	SCF		17.8		6	1.1	
	Zone:	1 & 2	21.5		32	6.8	
		3	22.9		53	12.1	
		4	26.3		86	22.6	
		5	31.6		235	74.2	
		6	37.1		57	21.0	
		7	43.8		102	44.6	
		8	49.5		3	1.7	184.1
Non-advertising - Commingled			16.1		291		46.9
Piece Rate Revenue							
Required Preparation			25.1	144,965		36,386.3	
Presorted to 3-digit			20.8	248,474		51,682.7	
Presorted to 5-digit			18.3	676,566		123,811.5	
Presorted to Carrier Route			11.3	1,075,000		121,475.0	333,355.5
Commingled, Required Preparation			29.4	331		97.4	
Presorted to 3-digit			25.3	464		117.5	
Presorted to 5-digit			19.7	899		177.1	
Presorted to Carrier Route			12.2	301		36.7	428.7
Piece Discounts							
Prepared to Delivery Office			(0.7)	3,210		(22.5)	
Prepared to SCF			(0.4)	411,046		(1,644.2)	
High-Density			(1.9)	2,176		(41.3)	
Saturation			(3.7)	7,659		(283.4)	
Editorial content			(4.4)	1,712,615		(75,355.0)	(77,346.4)
Commingled							
Delivery Office			(1.3)	2		0.0	
Prepared to SCF			(0.7)	142		(1.0)	
Editorial Discount			(5.9)	809		(47.7)	(48.7)
Automation Discounts for Automation Compatible Mail							
from Required:							
Pre-barcoded letters			(6.2)	12,255		(759.8)	
Pre-barcoded flats			(4.6)	10,512		(483.6)	(1,243.4)
from 3-Digit:							
Pre-barcoded letters			(4.7)	2,583		(121.4)	
Pre-barcoded flats			(2.4)	75,401		(1,809.6)	(1,931.0)
from 5-Digit:							
Pre-barcoded letters			(3.5)	22,138		(774.8)	
Pre-barcoded flats			(2.1)	327,068		(6,868.4)	(7,643.2)
Commingled:							
Basic Flats			(4.6)	0		0.0	
3-Digit Flats			(3.9)	3		(0.1)	
5-Digit Flats			(2.9)	13		(0.4)	
Saturation			(3.7)	0		0.0	(0.5)
							350,603.0
			Times Correction Factor		1.0003498		$350,725.7 *
Fees	Address Correction					4,224.5	
	Periodicals Application					159.9	4,384.4 *
TOTAL PERIODICALS – Nonprofit							**$355,110.0** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

PERIODICALS - Classroom

			Rate (cents)	Pieces (000)	Pounds (000)	Revenues (000)	
Pound Rate Revenue							
Advertising							
	Delivery Office		15.5		0	$0.0	
	SCF		17.8		10	1.7	
	Zone:	1 & 2	21.5		180	38.7	
		3	22.9		435	99.6	
		4	26.3		834	219.2	
		5	31.6		972	307.2	
		6	37.1		238	88.4	
		7	43.8		288	126.1	
		8	49.5		230	114.1	$995.0
Nonadvertising			15.6		19,980		3,116.9
Piece Rate Revenue							
Required Preparation			25.1	11,752		2,949.8	
Presorted to 3-digit			20.8	4,575		951.7	
Presorted to 5-digit			18.3	14,696		2,689.4	
Presorted to Carrier Route			11.3	14,326		1,618.9	8,209.8
Piece Discounts							
Prepared to Delivery Office			(0.7)	0		0.0	
Prepared to SCF			(0.4)	306		(1.2)	
High-Density			(1.9)	0		0.0	
Saturation			(3.7)	0		0.0	
Editorial content			(4.4)	40,332		(1,774.6)	(1,775.8)
Automation Discounts for Automation Compatible Mail							
from Required:							
Pre-barcoded letters			(6.2)	11		(0.7)	
Pre-barcoded flats			(4.6)	22		(1.0)	
from 3-Digit:							(1.7)
Pre-barcoded letters			(4.7)	10,773		(0.5)	
Pre-barcoded flats			(2.4)	2,000		(48.0)	(48.5)
from 5-Digit:							
Pre-barcoded letters			(3.5)	7		(0.2)	
Pre-barcoded flats			(2.1)	7,623		(160.1)	(160.3)
							10,335.4
			Times Correction Factor		1.0037664		$10,374.3 *
Fees:	Address Correction					89.2	
	Periodicals Application					3.4	92.6 *
TOTAL PERIODICALS -- Classroom							**$10,466.9 **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

PERIODICALS - Regular Rate

			Rate (cents)	Pieces (000)	Pounds (000)	Revenues (000)	
Pound Rate Revenue							
Advertising							
	Delivery Office		15.5		9,922.8	$1,538.0	
	SCF		17.8		455,585.3	81,094.2	
	Zone:	1 & 2	21.5		268,894.2	57,812.2	
		3	22.9		144,559.4	33,104.1	
		4	26.3		219,255.7	57,664.3	
		5	31.6		220,068.7	69,541.7	
		6	37.1		78,240.5	29,027.2	
		7	43.8		61,067.0	26,747.4	
		8	49.5		53,781.7	26,622.0	$383,151.1
Nonadvertising			16.1		1,808,131.9	291,109.2	291,109.2
Science of Agriculture							
	Delivery office		11.6		21.2	2.5	
	SCF		13.3		1,108.7	147.5	
	Zones 1&2		16.1		4,777.4	769.2	919.2
Piece Rate Revenue							
Required Preparation			29.4	497,295.9		146,205.0	
Presorted to 3-Digit			25.3	1,580,876.5		399,961.8	
Presorted to 5-Digit			19.7	2,256,520.9		444,534.6	
Presorted to Carrier Route			12.2	2,811,054.7		342,948.7	1,333,650.1
Piece Discounts							
Prepared to Delivery Office			(1.3)	39,522.2		(513.8)	
Prepared to SCF			(0.7)	2,144,003.6		(15,008.0)	
High Density			(1.9)	19,826.8		(376.7)	
Saturation			(3.7)	16,417.0		(607.4)	
Editorial content			(5.9)	4,192,159.4		(247,337.4)	(263,843.3)
Automation Discounts for Automation Compatible Mail							
From Required:							
Pre-barcoded			(6.2)	32,269.2		(2,000.7)	
Pre-barcoded flats			(4.6)	107,273.1		(4,934.6)	(6,935.3)
From 3-Digit:							
Pre-barcoded letter			(4.7)	12,026.8		(565.3)	
Pre-barcoded flats			(3.9)	572,917.0		(22,343.8)	(22,909.1)
From 5-Digit:							
Pre-barcoded letter			(3.5)	22,531.6		(788.6)	
Pre-barcoded flats			(2.9)	1,073,328.8		(31,126.5)	(31,915.1)
							1,683,226.8
		Plus Key Rate Revenue					38.3
							1,683,265.1
		Times Correction Factor			1.000837		$1,684,673.4
Fees							
	Address Correction					14,060.1	
	Periodicals Application					532.2	14,592.3 *
TOTAL PERIODICALS – Regular Rate							**$1,699,265.7** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)		
Standard Mail Regular Subclass							
Presort Category							
Letters							
Basic	per piece	$0.235	3,442,852		$809,070		
3/5-Digit	per piece	0.207	2,504,125		518,354		
subtotal				5,946,977			$1,327,424
Nonletters, Piece-Rated							
Basic	per piece	0.304	995,327		302,579		
3/5-Digit	per piece	0.240	1,002,319		240,557		
subtotal				1,997,646			543,136
Nonletters, Pound-Rated							
Basic	per piece	0.164	933,350		153,069		
3/5-Digit	per piece	0.100	948,626		94,863		
subtotal				1,881,976			247,932
Basic	per pound	0.677	409,809		277,441		
3/5-Digit	per pound	0.677	440,939		298,516		
subtotal				850,748			575,957
			pieces >	9,826,599			2,694,449
Dropship Discounts:							
Piece-Rated							
BMC	per piece	(0.016)	878,482		(14,056)		
SCF	per piece	(0.021)	1,085,068		(22,786)		
subtotal				1,963,550			(36,842)
Pound-Rated							
BMC	per pound	(0.079)	137,668		(10,876)		
SCF	per pound	(0.100)	71,967		(7,197)		
subtotal				209,635			(18,073)
Revenue from Rates			pieces >	**9,826,599**			**$2,639,534** *
Fees							
Address Correction					$5,390.1		
Bulk Permit					6,606.6		
Certificate of Mailing					0.1		
							11,997 *
Total Revenue – Presort Category							**$2,651,531** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)		
Standard Mail Regular Subclass (con)							
Automation Category							
Letters							
Basic	per piece	0.183	3,166,730		579,512		
3-Digit	per piece	0.176	9,055,146		1,593,706		
5-Digit	per piece	0.160	6,355,370		1,016,859		
subtotal				18,577,246		3,190,077	
Flats, Piece-Rated							
Basic	per piece	0.245	132,088		32,362		
3/5-Digit	per piece	0.203	4,828,284		980,142		
subtotal				4,960,372		1,012,504	
Flats, Pound-Related							
Basic	per piece	0.105	126,017		13,232		
3/5-Digit	per piece	0.063	4,368,051		275,187		
subtotal				4,494,068		288,419	
Basic	per pound	0.677	47,623		32,241		
3/5-Digit	per pound	0.677	1,425,713		965,208		
subtotal				1,473,336		997,449	
			pieces >	28,031,686		5,488,449	
Dropship Discounts							
Piece-Rated							
BMC	per piece	(0.016)	7,365,096		(117,842)		
SCF	per piece	(0.021)	2,528,836		(53,106)		
				9,893,932		(170,948)	
Pound-Rated							
BMC	per pound	(0.079)	593,624		(46,896)		
SCF	per pound	(0.100)	443,079		(44,308)		
				1,036,703		(91,204)	
Revenue from Rates			pieces >	**28,031,686**		**$5,226,297**	*
Fees							
Address Correction					$ 14,063.7		
Bulk Permit					18,846.1		
Certificate of mailing					0.2		
						32,910	*
Total Revenue -- Automation Category						**$5,259,207**	**
Regular Subclass Total							
Total Postage/Pieces (excluding fees)				37,858,285		$ 7,865,831	
Times Revenue Adjustment Factor 1/						1.00024	
Adjusted Revenue						7,867,719	
Plus Fees						44,907	
Plus Residual Shape Revenue						104,672	
Total Revenue - Regular						**$ 8,017,298**	
Revenue per Piece						$ 0.2118	

1/ USPS-T-36, WP 1, page 22, L.25.

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)		
Standard Mail (con)							
Enhanced Carrier Route Subclass							
Letters							
Basic	per piece	$0.162	3,202,917		$518,873		
Automated	per piece	0.156	2,072,340		323,285		
High Density	per piece	0.139	401,721		55,839		
Saturation	per piece	0.130	3,160,268		410,835		
subtotal				8,837,246		$1,308,832	
Nonletters, Piece-Rated							
Basic	per piece	0.162	5,864,540		950,055		
High Density	per piece	0.151	747,490		112,871		
Saturation	per piece	0.140	5,903,812		826,534		
subtotal				12,515,842		1,889,460	
Nonletters, Pound-Rated							
Basic	per piece	0.025	4,735,797		118,395		
High Density	per piece	0.014	401,722		5,624		
Saturation	per piece	0.003	2,268,417		6,805		
subtotal				7,405,936		130,824	
Basic	per pound	0.663	1,501,421		995,442		
High Density	per pound	0.663	135,201		89,638		
Saturation	per pound	0.663	671,123		444,955		
subtotal				2,307,745		1,530,035	
			pieces >	28,759,024		$4,859,151	
Dropship Discounts							
Piece-Rated							
BMC		(0.016)	4,204,655		(67,274)		
SCF		(0.021)	10,200,512		(214,211)		
DDU		(0.026)	4,121,531		(107,160)		
subtotal				18,526,698		(388,645)	
Pound-Rated							
BMC		(0.079)	345,802		(27,318)		
SCF		(0.100)	1,226,269		(122,627)		
DDU		(0.126)	639,663		(80,598)		
subtotal				2,211,734		(230,543)	
Revenue from Rates			pieces >	**28,759,024**		**$4,239,963**	*
Fees							
Address Correction					12,598.6		
Bulk Permit					19,335.1		
Certificate of Mailing					0.2		
						31,934	*

Enhanced Carrier Route Subclass Total

Total Postage/Pieces (excluding fees)	28,759,024	$	4,239,963
Times Revenue Adjustment Factor 1/			1.000002
Adjusted Revenue			4,239,971
Plus Fees			31,934
Plus Residual Shape Revenue			8,367
Total Revene - Enhanced Carrier Route		**$**	**4,280,273** **
Revenue per Piece		$	0.1488

1/ USPS-T-36, WP 1, page 23, L.27.

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)	
Standard Class Nonprofit						
Presort Category						
Letters						
Basic	per piece	$0.165	873,114		$144,064	
3/5-Digit	per piece	0.138	1,855,129		256,008	
subtotal				2,728,243		$400,072
Nonletters, Piece-Rated						
Basic	per piece	0.229	259,067		59,326	
3/5-Digit	per piece	0.161	331,026		53,295	
subtotal				590,093		112,621
Nonletters, Pound-Rated						
Basic	per piece	0.116	117,285		13,605	
3/5-Digit	per piece	0.048	150,306		7,215	
subtotal				267,591		20,820
Basic	per pound	0.550	46,508		25,579	
3/5-Digit	per pound	0.550	50,346		27,690	
subtotal				96,854		53,269
			pieces >	3,585,927		586,782
Dropship Discounts:						
Piece-Rated						
BMC	per piece	(0.016)	156,258		(2,500)	
SCF	per piece	(0.021)	880,268		(18,486)	
subtotal				1,036,526		(20,986)
Pound-Rated						
BMC	per pound	(0.079)	5,889		(465)	
SCF	per pound	(0.100)	9,559		(956)	
subtotal				15,448		(1,421)
Revenue from Rates			pieces >	**3,585,927**		**$564,375** *
Fees						
Address Correction					$1,063.3	
Bulk Permit					9,429.1	
Certificate of Mailing					0.0	
						10,492 *
Total Revenue -- Presort Category						**$574,867** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)		
Standard Class Nonprofit (con)							
Automation Category							
Letters							
Basic	per piece	0.115	1,328,485		152,776		
3-Digit	per piece	0.110	2,902,691		319,296		
5-Digit	per piece	0.089	1,913,283		170,282		
subtotal				6,144,459		642,354	
Flats, Piece-Rated							
Basic	per piece	0.178	49,011		8,724		
3/5-Digit	per piece	0.140	576,939		80,771		
subtotal				625,950		89,495	
Flats, Pound-Related							
Basic	per piece	0.065	19,564		1,272		
3/5-Digit	per piece	0.027	174,331		4,707		
subtotal				193,895		5,979	
Basic	per pound	0.550	6,787		3,733		
3/5-Digit	per pound	0.550	54,081		29,745		
subtotal				60,868		33,478	
			pieces >	6,964,304		771,306	
Dropship Discounts							
Piece-Rated							
BMC	per piece	(0.016)	1,589,715		(25,435)		
SCF	per piece	(0.021)	609,983		(12,810)		
				2,199,698		(38,245)	
Pound-Rated							
BMC	per pound	(0.079)	9,120		(720)		
SCF	per pound	(0.100)	8,281		(828)		
				17,401		(1,548)	
Revenue from Rates			pieces >	**6,964,304**		**$731,513**	*
Fees							
Address Correction					2,774.3		
Bulk Permit					18,312.4		
Certificate of mailing					0.1		
						21,087	*
Total Revenue -- Automation Category						**$752,600**	**
Nonprofit Subclass Total							
Total Postage/Pieces (excluding fees)				10,550,231		$ 1,295,888	
Times Revenue Adjustment Factor 1/						0.99938	
Adjusted Revenue						1,295,085	
Plus Fees						31,579	
Plus Residual Shape Revenue						4,412	
Total Revene - Nonprofit						**$ 1,331,076**	
Revenue per Piece						$ 0.1262	

1/ USPS-T-36, WP 2, page 6, L.23.

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

	Unit	Rate ($)	TYAR Volume (000)		Revenue (000)		
Standard Class Nonprofit (con)							
Enhanced Carrier Route Subclass							
Letters							
Basic	per piece	$0.099	892,145		$88,322		
Automated	per piece	0.077	360,597		27,766		
High Density	per piece	0.063	41,438		2,611		
Saturation	per piece	0.057	523,664		29,849		
subtotal				1,817,844		$148,548	
Nonletters, Piece-Rated							
Basic	per piece	0.099	449,535		44,504		
High Density	per piece	0.092	11,291		1,039		
Saturation	per piece	0.084	147,351		12,377		
subtotal				608,177		57,920	
Nonletters, Pound-Rated							
Basic	per piece	0.039	130,774		5,100		
High Density	per piece	0.032	3,271		105		
Saturation	per piece	0.024	30,985		744		
subtotal				165,030		5,949	
Basic	per pound	0.290	38,652		11,209		
High Density	per pound	0.290	941		273		
Saturation	per pound	0.290	8,505		2,466		
subtotal				48,098		13,948	
			pieces >	2,591,051		$226,365	
Dropship Discounts							
Piece-Rated							
BMC		(0.016)	649,403		(10,390)		
SCF		(0.021)	864,975		(18,164)		
DDU		(0.026)	370,155		(9,624)		
subtotal				1,884,533		(38,178)	
Pound-Rated							
BMC		(0.079)	10,808		(854)		
SCF		(0.100)	24,589		(2,459)		
DDU		(0.126)	2,291		(289)		
subtotal				37,688		(3,602)	
Revenue from Rates			pieces >	**2,591,051**		**$184,585**	*
Fees							
Address Correction					2,485.3		
Bulk Permit					6,813.1		
Certificate of Mailing					0.0		
						9,298	*
Nonprofit ECR Subclass Total							
Total Postage/Pieces (excluding fees)				2,591,051		$ 184,585	
Times Revenue Adjustment Factor 1/						1.000104	
Adjusted Revenue						184,604	
Plus Fees						9,298	
Plus Residual Shape Revenue						178	
Total Revene - Nonprofit ECR						**$ 194,080**	**
Revenue per Piece						$ 0.0749	

1/ USPS-T-36, WP 2, page 7, L.28.

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

STANDARD CLASS- Parcel Post		**pieces**		**revenues**		
Intra-BMC	Local Zone	3,078,378		$8,957,778		
	Zones 1 & 2	32,409,325		106,455,903		
	Zone 3	3,813,826		14,056,129		
	Zone 4	669,519		2,673,019		
	Zone 5	28,189		134,977		
	Subtotal	39,999,237		132,277,805		
times revenue adjustment				1.019723626	**$134,886,803**	
DBMC	Zones 1 & 2	106,188,802		$284,252,226		
	Zone 3	17,713,320		58,437,498		
	Zone 4	2,857,174		9,701,537		
	Zone 5	11,091		46,685		
	Subtotal	126,770,387		352,437,946		
times revenue adjustment				1.000662955	**$352,671,597**	
Inter-BMC	Zones 1 & 2	3,704,214		13,730,604		
	Zone 3	7,593,375		31,513,500		
	Zone 4	11,808,654		57,737,167		
	Zone 5	10,097,021		59,722,703		
	Zone 6	4,599,446		30,213,857		
	Zone 7	2,626,129		19,026,479		
	Zone 8	4,148,232		30,557,024		
	Subtotal	44,577,074		242,501,334		
plus non-machinable surcharge (p.37 divided by factor)						
8.747471%	times	$1.65	times volume=	6,433,955		
				248,935,289		
times revenue adjustment				0.982864304	**$244,669,610**	$732,228,010
Other Postage Revenues						
	Pickup			225,447		
	Alaska Bypass	1,734,763		10,360,294		
	Parcel Enclosures			178,327		
	OMAS	1,373,539		10,804,420	**$21,568,488**	**$753,796,498**
Fees	Address Correction			$136,300		
	Bulk Permit			17,000		
	Certificate of mailing			10,100		
	Special handling			288,800		
	Parcel air lift			67,000		**$519,200**
Adjustments due to Classification Change (no volume change)						
	Balloon parcels			$3,620,373		
	Prebarcoding			(2,717,889)		
	BMC presort			(2,679,935)		
	OBMC entry			(6,187,972)		
	DSCF entry			(9,091,895)		
	DDU entry			(1,359,658)		**($18,416,976)**
Adjustments due to volume changes for other services						
		volume		revenue/piece $3.4722		
	Packaging service	(54,961)		(190,836)		
	Delivery confirmation	1,383,079		4,802,327		**$4,611,492**
		1,328,118				
Total STANDARD CLASS - ParcelPostbr1		**215,783,118**				**$740,510,214**

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

STANDARD - Bound Printed Matter

Single-Piece Rate

Zone	Pieces	Revenues
LOCAL	775,798	$923,913
1,2	19,204,420	30,744,559
3	2,536,550	4,269,782
4	3,985,388	7,129,372
5	4,076,004	7,894,530
6	1,681,751	3,592,658
7	1,230,626	2,953,328
8	1,888,562	4,712,643
Total	35,379,099	62,220,785

Bulk Rate

	Piece Rate			Pound Rate		
Zone	Pieces	Rate	Revenues	Pounds	Rate	Revenues
LOCAL	82,771,839	$0.54	$44,696,793	201,848,393	$0.028	$5,651,755
1,2	264,901,732	0.72	190,729,246	644,867,701	0.051	32,888,253
3	68,789,799	0.72	49,528,656	168,163,380	0.073	12,275,927
4	46,312,783	0.72	33,345,204	107,889,169	0.112	12,083,587
5	30,894,503	0.72	22,244,042	67,810,846	0.171	11,595,655
6	11,642,300	0.72	8,382,456	23,302,156	0.233	5,429,402
7	8,758,294	0.72	6,305,972	18,241,553	0.307	5,600,157
8	12,590,632	0.72	9,065,255	26,175,988	0.371	9,711,292
Total	526,661,882		364,297,624	1,258,299,186		95,236,028

SUMMARY

			Revenues	
VOLUME		562,040,981		
REVENUE from RATES				
Single-piece catalogs	$62,220,785			
times Base Year Revenue Adjustment	0.997334550		$62,054,939	
Bulk-rate catalogs	$459,533,652			
less Bulk carrier presort discount	(9,571,049)	449,962,603		
times Base Year Revenue Adjustment		0.997445175	448,813,027	
Total REVENUE from RATES				$ 511,302,966
REVENUE from FEES:				
Address correction fees			$407,800	
Certificates of mailing			27,000	
Special handling			200	435,000
Revenues before adjustments				**$511,737,966**
Adjustments:				
Volume over 10 pounds	**13,023,500**		$21,315,889	
Prebarcoding			(8,205,027)	**$13,110,862**
Total STANDARD, BOUND PRINTED MATTER	**575,064,481**			$ **524,848,828**

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

STANDARD MAIL - Special Rate

	Pounds	Rate per Pound	Revenues (000)	
Revenue from rates:				
Single piece:				
First Pound	170,774,606	$1.13	$192,975.3	
Second through seventh pound	177,911,353	$0.45	80,060.1	
Over seven pounds	40,937,017	$0.28	11,462.4	
			$284,497.8	
	times revenue adjustment	0.9998579		$284,457.4
Presorted:				
First Pound				
Level A presort (5-digit)	552,984	$0.64	$353.9	
Level B presort (BMC)	35,343,409	$0.95	33,576.2	
Second through seventh pound	26,909,875	$0.45	12,109.4	
Over seven pounds	1,403,826	$0.28	393.1	
			$46,432.7	
	times revenue adjustment	1.0011985		$46,488.3
	Revenue from Rates			**$330,945.7** *
Fees: Address Correction			$99.1	
Certificate of Mailing			9.7	
Bulk permit			93.5	*
Special Handling			73.8	**276.1**
Prebarcoded:				**(1,873.1)** *
Total Special Rate	206,671,000			**$329,348.7** **

COMMISSION RECOMMENDED RATES
APPLIED TO TEST YEAR VOLUMES

STANDARD MAIL - Library Rate

		Pounds	Rate per Pound	Revenues (000)		
Revenue from Rates:						
First Pound		29,836,000	$1.13	$33,714.7		
Second through seventh pound		30,200,422	0.45	13,590.2		
Over seven pounds		7,233,178	0.26	1,880.6		
				$49,185.5		
		times revenue adjustment		1.003521		
			Revenue from rates		**$49,358.7**	*
Fees:	Address Correction			$31.7		
	Certificate of Mailing			1.4		
	Special Handling			25.0	**58.1**	*
Adjustments:						
	Delivery Confirmation	19,303		31.8		
	Prebarcode			(24.5)	**7.3**	*
Total Library Rate		**29,855,303**			**$49,424.1**	**

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES		Automated Transactions (000)	Fee	Manual Transactions (000)	Fee	Revenues (000)
A. Address Correction Fees						
	First Class					
Regular:	letter	2,432	$ 0.20	27,903	$ 0.50	$ 14,437.8
	letter presort	229	0.20	2,623	0.50	1,357.3
	post card	141	0.20	1,618	0.50	837.3
	post card presort	30	0.20	339	0.50	175.6
Auto:	auto letter	1,643	0.20	18,848	0.50	9,752.3
	auto post card	85	0.20	978	0.50	506.1
	Total First-Class	4,560		52,309		27,066.4
	Priority	0	0.20	128	0.50	63.9
	Periodicals					
	in county	4,546	0.20	1,975	0.50	1,896.8
	reg. rate	33,699	0.20	14,641	0.50	14,060.1
	non-profit	10,125	0.20	4,399	0.50	4,224.5
	classroom	214	0.20	93	0.50	89.2
	Total Periodicals	48,584		21,108		20,270.6
	Standard Mail A					
	Single Piece	0	0.20	0	0.50	0
Bulk:	regular mail	10,346	0.20	8,768	0.50	6,453.3
	automation	26,996	0.20	22,878	0.50	16,838.0
	ECR	24,184	0.20	20,494	0.50	15,083.8
	Total Bulk Std. A	61,526		52,140		38,375.2
	Standard Mail B					
	total parcel post	241	0.20	176	0.50	136.3
	BPM	722	0.20	527	0.50	407.8
	Special Rate	175	0.20	128	0.50	99.1
	Library	56	0.20	41	0.50	31.7
	Total Std. B	1,194		872		674.9
Grand Total Address Correction		115,864		126,556		$ 86,451.0 **
Grand Total Trans. (Auto & Manual, in thousands)				242,421		

B. Bulk/Presort Mailing Fees

	Transactions	Fee	Revenues
First Class Presort			
Letters and Priority	57,464	$ 100.00	$ 5,746,361
Postcards	3,379	100.00	337,916
Total First-Class	60,843		6,084,297
Standard A Bulk			
Regular	447,878	100.00	44,787,833
Non-profit	345,545	100.00	34,554,480
Total Std. A	793,423		79,342,313
Standard B Presort			
Special Rate	935	100.00	93,540
DBMC Permit	170	*100.00*	17,026
TOTAL Bulk/Presort Mailing Fees	855,372		85,537,176 **

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

C. Business Reply Fees

First Class	Transactions (000)	Fee	Revenues (000)	
Advance Deposit				
Per piece Qualified	194,046	$ 0.05	$ 9,702.3	
Per piece -- other	428,168	0.08	34,253.4	
W/O Advance deposit				
Per piece	61,775	0.30	18,532.4	
Total First class	683,988		62,488.1	
Priority				
Per piece (w/ advance deposit)	4,911	0.08	392.9	
Per piece (w/o advance deposit)	352	0.30	105.7	
Total Priority	5,263		498.6	
Fees				
Accounting fee	137	300.00	41,200.9	
Nonadvance permit	222	100.00	22,236.1	
Total Fees	360		63,437.0	
Total Business Reply	689,251		$ 126,423.7	**

D. Certificate of Mailing Fees (on page 22)

E. Certified Mail Fees	Transactions (000)	Fee	Revenues (000)	
Basic Fee	300,107	$ 1.40	$ 420,149.8	
adjustments:				
Delivery Confirmation	(3,577)	1.40	(5,008.2)	
Packaging Service	4	1.40	5.1	
TOTAL Certified Mail	296,533		$ 415,146.7	**
Additional Services				
Return Receipts			314,804.0	
Restricted Delivery			10,863.0	
Total additional services			$ 325,667.1	

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

D. Certificate of Mailing Fees
(all distributed to subclasses)

TRANSACTIONS		Basic	Firm book	First 1000	Additional 1000	Subclass Total	Class Total	
Regular:	letter	2,845,389	6,783,965	0	0	9,629,354		
	letter presort	0	0	9,489	104,378	113,867		
	post card	165,012	393,421	0	0	558,433		
	post card presort	0	0	1,227	13,500	14,727		
Auto:	auto letter	0	0	68,177	749,951	818,128		
	auto post card	0	0	3,538	38,918	42,456	11,176,967	
Priority		522,274	214	163	1,789	524,439	524,439	
Std. A -- Single Piece		0	0	0	0	0		
Bulk - Regular:	Presort	0	0	11	121	132		
	Automation	0	0	31	346	378		
	ECR	0	0	32	355	387		
Bulk - Nonprofit:	Presort	0	0	4	44	48		
	Automation	0	0	8	86	94		
	ECR	0	0	3	32	35	1,074	
Standard B:	Parcels	14,180	6,497			20,676		
	Bound Printed Matter	37,760	17,309			55,089		
	Special Rate	13,578	6,221			19,798		
	Library Rate	1,961	899			2,860	98,424	
International Mail		15,240	0	306	3,364	18,909	18,909	
	TOTALS	3,615,413	7,208,526	82,990	912,885	11,819,813	11,819,813	
		Total includes Adjustment for Packaging Service in the Amount of:					2,709	

REVENUES	Fee >>	$0.60	$0.25	$3.00	$0.40	Total		
Regular:	letter	$1,707,233	$1,695,991	$0	$0	$3,403,225		
	letter presort	0	0	28,467	41,751	70,218		
	post card	99,007	98,355	0	0	197,363		
	post card presort	0	0	3,682	5,400	9,082		
Auto:	auto letter	0	0	204,532	299,980	504,513		
	auto post card	0	0	10,614	15,567	26,181	$4,210,581	*
Priority		313,364	54	488	716	314,621	314,621	*
Standard A-- Single Piece		0	0	0	0	0		
Bulk - Regular:	Standard Presort	0	0	33	49	82		
	Automation	0	0	94	138	233		
	ECR	0	0	97	142	239		
Bulk - Nonprofit	Standard Presort	0	0	12	18	30		
	Automation	0	0	23	34	58		
	ECR	0	0	9	13	22	662	*
Standard B:	Parcel Post	8,508	1,624	0	0	10,132		
	Bound Printed Matter	22,668	4,327	0	0	26,995		
	Special Rate	8,147	1,555	0	0	9,702		
	Library Rate	1,177	225	0	0	1,401	48,231	*
International Mail		9,144	0	917	1,345	11,407	11,407	
	TOTALS	$2,169,248	$1,802,131	$248,969	$365,154	$4,585,502	$4,585,502	**
		Total includes Adjustment for Packaging Service in the Amount of:					$1,625	

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

F. Collect on Delivery Fees

Fee charge for Collectable amount or Insurance coverage up to	Value	Transactions (000)	Fee	Revenues (000)	
	$ 50	1,780	$ 4.00	$ 7,119.4	
	100	1,227	5.00	6,133.5	
	200	633	6.00	3,799.5	
	300	147	7.00	1,026.3	
	400	45	8.00	361.6	
	500	21	9.00	186.0	
	600	30	10.00	299.7	
TOTAL before Additional Services		3,882		18,926.0	
Additional Services -- only Restricted Delivery from other subservices					
Registered COD		4.7	4.00	19.0	
Notice of Non-Delivery		0.0	3.00	0.0	
Alteration of COD		6.1	3.00	18.3	
Restricted Delivery		0.0	2.75	0.0	
TOTAL Collect on Delivery		3,887		$ 18,963.3	**

G. Insurance

	Value	Transactions (000)	Fee	Revenues (000)	
Domestic Liability up to	$ 50	12,810	$ 0.85	$ 10,888.8	
	100	8,545	1.80	15,381.3	
	200	3,909	2.75	10,749.8	
	300	1,428	3.70	5,283.2	
	400	525	4.65	2,440.2	
	500	658	5.60	3,682.1	
	600	529	6.55	3,465.0	
	600.01-2000	1,028	13.68	14,056.4	
	2000.01-5000	18	34.58	607.0	
International					
Canada		183	2.29	420.2	
Other		615	2.19	1,346.2	
TOTAL Insurance		30,247		$ 68,320.2	**

Totals include an Adjustment for Packaging Service in the amt. of:	Volume Adj.	Ave. Rev/Pc.	Revenue Adj
	461	2.26	1,042.2

Additional Services	
Return Receipts	1,020.2
Restricted Delivery	28.6
Total additional services	1,048.7

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

H. Merchandise Return	Transactions (000)	Fee	Revenues (000)	
Per facility receiving return labels	1.3	$ 100.00	$ 131.6	
Per Transaction				
1st class	169.0	0.30	50.7	
Priority	234.7	0.30	70.4	
Std. (A)	363.0	0.30	108.9	
Std. (B)	3,197.9	0.30	959.4	
Total Transactions	3,964.6		1,189.4	
Total Merchandise Return	3,965.9		1,321.0	**

I. Money Orders

	Value to ($)	Transactions (000)	Fee	Revenues (000)	
APO-FPO	700	1,249	$ 0.30	$ 374.7	
Domestic	700	235,072	0.80	188,057.5	
International	700	4,750	3.00	14,250.4	
Inquiry fees		1,006	2.75	2,766.0	
Subtotal		241,071		$ 205,448.7	
Money Order Float Interest				63,175.3	*
Outstanding MO taken into revenue				24,645.3	*
MO Comm redeem international for issue				188.0	*
TOTAL Money Orders		241,071		$ 293,457.3	**

J. On-Site Meter Settings	Transactions (000)	Fee	Revenues (000)	
First meter by appointment	116.450	$ 27.50	$ 3,202.4	
First meter on unscheduled request	8.469	31.00	262.5	
Additional meters	16.938	4.00	67.8	
Checking out of meters	44.463	8.50	377.9	
Total On-Site Meter Settings	186.321		$ 3,910.6	
BY acct 43330 Balance. 4,029,050	Times Revenue Adjustment Factor:		1.0456	
BY and TYBR Rev. estimated by USPS. 3,853,450				
Revenue Adjustment Factor (RAF): 1.0456	Adjusted Total On-Site Meter Settings		$ 4,088.8	**

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

K. Parcel Air Lift

	Transactions (000)	Fee	Revenues (000)	
Fees in addition to parcel postage				
Up to 2 pounds	31.647	$ 0.40	$ 12.7	
Over 2 up to 3 pounds	5.636	0.75	4.2	
Over 3 up to 4 pounds	11.161	1.15	12.8	
Over 4 pounds	24.044	1.55	37.3	
TOTAL Parcel Air Lift	72.488		$ 67.0	**
L. Permit Imprint	91.6	$ 100	$ 9,159.2	**

M. Post Office Boxes & Caller Service

	box size	Transactions	Annual Fee	Revenues	
Group A - Offices w/ city carrier					
cubic inches <296	1	62,718	$ 60	$ 3,763,080	
296-499	2	3,843	92	353,556	
500-999	3	2,198	160	351,680	
1000-1999	4	211	302	63,722	
over 2000	5	60	522	31,320	
Group B - Offices w/ city carrier					
	1	110,731	54	5,979,474	
	2	25,477	82	2,089,114	
	3	9,356	140	1,309,840	
	4	1,354	272	368,288	
	5	1,385	434	601,090	
Group C - Offices w/ city carrier					
	1	5,014,978	44	220,659,032	
	2	2,099,680	64	134,379,520	
	3	705,835	114	80,465,190	
	4	148,067	194	28,724,998	
	5	31,042	324	10,057,608	
Group D - Offices w/o city carrier					
	1	3,950,249	14	55,303,486	
	2	1,539,619	24	36,950,856	
	3	400,319	44	17,614,036	
	4	32,096	66	2,118,336	
	5	3,593	104	373,672	
Group E - Ineligible for carrier delivery	1 - 5	921,422	-	-	
Sub-total		15,064,233		601,557,898	
Caller Services					
Group A		1,239	550	681,231	
Group B		1,128	550	620,657	
Group C		80,456	550	44,250,651	
Reserved numbers		150,749	36	5,426,978	
Sub-total, caller services		233,572		$ 50,979,518	
Grand Total		15,297,805		$ 652,537,416	*

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

N. Registered Mail

Fee Charges

Domestic Value up to	Covered by USPS Insurance Fees	Covered by USPS Insurance Transactions (000)	Covered by USPS Insurance Revenues (000)	not Covered by USPS Insurance Fees	not Covered by USPS Insurance Transactions (000)	not Covered by USPS Insurance Revenues (000)
$0	N/A	-	$ -	$ 6.00	3,307	19,840.7
100	$ 6.20	812	5,033.9	N/A	-	-
500	6.75	1,175	7,931.1	N/A	-	-
1,000	7.30	926	6,761.1	N/A	-	-
2,000	7.85	770	6,046.6	N/A	-	-
3,000	8.40	455	3,825.2	N/A	-	-
4,000	8.95	291	2,605.3	N/A	-	-
5,000	9.50	273	2,593.2	N/A	-	-
6,000	10.05	165	1,655.1	N/A	-	-
7,000	10.60	110	1,169.2	N/A	-	-
8,000	11.15	65	720.5	N/A	-	-
9,000	11.70	44	514.8	N/A	-	-
10,000	12.25	103	1,263.5	N/A	-	-
11,000	12.80	27	341.6	N/A	-	-
12,000	13.35	74	987.3	N/A	-	-
13,000	13.90	31	436.3	N/A	-	-
14,000	14.45	44	638.4	N/A	-	-
15,000	15.00	46	688.5	N/A	-	-
16,000	15.55	17	260.9	N/A	-	-
17,000	16.10	46	748.5	N/A	-	-
18,000	16.65	24	398.3	N/A	-	-
19,000	17.20	18	305.9	N/A	-	-
20,000	17.75	34	608.1	N/A	-	-
21,000	18.30	31	562.2	N/A	-	-
22,000	18.85	6	115.8	N/A	-	-
23,000	19.40	13	245.4	N/A	-	-
24,000	19.95	14	286.6	N/A	-	-
25,000	20.50	129	2,651.8	N/A	-	-
Subtotals		5,744	49,395.0		3,307	19,840.7
International						
$ 100	6.20	6,108	37,867.8			
500	6.75	9	63.7			
1,000	7.30	10	72.6			
Totals		11,871	87,399.2		3,307	19,840.7
Combined TOTAL before Handling Charges					15,178	107,239.9
Handling Charges	$ 0.55	146	$ 80.5			
Combined TOTAL for Registered Mail					15,178	107,320.4 **
Additional Services						
Return Receipts						3,188.2
Restricted Delivery						661.9
Total Additional Services						3,850

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

O. Restricted Delivery Fees

	Transactions	Fee	Revenues	
Registry	240,706	$ 2.75	$ 661,942	
Collect on Delivery	0	2.75	0	
Insurance	10,391	2.75	28,576	
Certified Mail	3,950,187	2.75	10,863,015	
TOTAL Restricted Delivery Fees	4,201,285		$ 11,553,534	**

P. Return Receipt Fees

	Transactions (000)	Fee	Revenues (000)	
1. Requested at time of mailing				
To whom, date & address where delivered				
Registry	2,551	$ 1.25	$ 3,188.2	
Certified Mail	251,605	1.25	314,506.2	
Insured mail	807	1.25	1,008.9	
Merchandise	3,097	1.40	4,336.4	
2. Requested after mailing				
Registry	-	7.00	-	
Certified Mail	579	7.00	4,055.4	
Insured mail	-	7.00	-	
Merchandise				
Totals	258,639		$ 327,095.0	
TOTAL Return Receipt Fees				
Registry	2,551		3,188.2	
Certified Mail	252,184		318,561.6	
Insured mail	807		1,008.9	
Merchandise	3,097		4,336.4	
	258,639		$ 327,095.0	
Delivery Confirmation Adjustment				
Certified	(3,006)	1.25	(3,758)	
Packaging Service Adjustment				
Insurance	9	1.25	11.3	
Merchandise	5	1.40	7.6	
Adjusted Grand Total	255,648		$ 323,356.4	**

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

Q. Periodicals Application Fees

	Transactions	Fee	Revenues	
Within County				
Original Entry	102	$ 305.00	$ 31,228	
Additional Entry	21	50.00	1,039	
Reentry	769	50.00	38,462	
News Agents	21	50.00	1,063	
TOTAL Within County	914		$ 71,794	*
Regular Rate Publications				
Original Entry	759	305.00	231,485	
Additional Entry	154	50.00	7,704	
Reentry	5,702	50.00	285,107	
News Agents	158	50.00	7,883	
TOTAL Regular Rate	6,773		$ 532,180	*
Nonprofit Publications				
Original Entry	228	305.00	69,552	
Additional Entry	46	50.00	2,315	
Reentry	1,713	50.00	85,663	
News Agents	47	50.00	2,368	
TOTAL Nonprofit	2,035		$ 159,898	*
Classroom				
Original Entry	5	305.00	1,469	
Additional Entry	1	50.00	49	
Reentry	36	50.00	1,809	
News Agents	1	50.00	50	
TOTAL Classroom	43		$ 3,377	*
Summary				
Original Entry	1,094	305.00	333,734	
Additional Entry	222	50.00	11,107	
Reentry	8,221	50.00	411,042	
News Agents	227	50.00	11,365	
TOTAL Periodicals Application Fees	9,764		$ 767,249	**

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

R. Special Handling Fees		Transactions	Fee	Revenue	
Standard A					
Single piece	up to 10 lbs	0	$ 5.40	$ -	*
Standard B					
Parcel Post	up to 10 lbs	32,890	5.40	177,604	
	> 10 lbs	14,827	7.50	111,203	
TOTAL Parcel Post		47,717		$ 288,807	*
Special Rate	up to 10 lbs	12,397	5.40	66,944	
	> 10 lbs	909	7.50	6,821	
TOTAL Special rate		13,306		$ 73,765	*
Bound Printed Matter	up to 10 lbs	31	5.40	167	
	> 10 lbs	0	7.50	0	
Total BPM		31		$ 167	*
Library Rate	up to 10 lbs	3,270	5.40	17,657	
	> 10 lbs	985	7.50	7,384	
Total Library Rate		4,254		$ 25,042	*
International Mail	up to 10 lbs	0	5.40	0	
	> 10 lbs	0	7.50	0	
TOTAL International		0		$ -	*
TOTAL Special Handling Fees		65,308		$ 387,780	**

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

S. Stamped Envelopes

	Size #6-3/4 Transactions	Size #6-3/4 Fee	Size #10 Transactions	Size #10 Fee	Revenues
Plain Envelopes:					
Single	5,722,349	$ 0.07	32,193,389	$ 0.07	$ 2,654,102
Single (hologram)			2,737,146	0.08	218,972
Note: volumes below are in boxes of 500; except household					
Regular, Window, Precancelled Regular, Precancelled Window	39,398	8.50	222,477	11.50	2,893,368
Banded	6,271	9.50	8,770	12.00	164,816
Hologram	0		18,845	15.50	292,099
Total Plain Envelope transactions (in 500's)			377,067		
Total Plain Envelope revenues					6,223,356
Printed Envelopes:					
Regular, Window, Precancelled Regular, Precancelled Window	52,068	14.00	472,523	15.00	7,816,803
Hologram			5,716	19.00	108,604
Household Regular, Household Window (Box of 50)	23,387	3.00	89,010	3.25	359,442
Household Hologram (Box of 50)	0		13,859	3.50	48,506
Total Printed Envelope transactions (in 500's)			542,933		
Total Printed Envelope Revenues					8,333,356
		Less refunds on envelopes			-
TOTAL Stamped Envelopes (in 500's)			920,000		$ 14,556,712
times volume adjustment - pieces(000)	460,000	/	460,000		14,556,712

	Transactions (000)	Fee ($)	Revenues (000)	
T. Zip Coding of Mail Lists (per 1000 addresses)	0.8	70.00	58.9	**
U. Correction of Mailing Lists (per change of address)	3,830.4	0.20	766.1	**
V. Address Changes for Election Boards, etc. (per change of address)	2,911.6	0.17	495.0	**
W. Carrier Sequencing of Address Cards	N/A	0.20	-	

COMMISSION RECOMMENDED FEES
APPLIED TO TEST YEAR TRANSACTIONS

SPECIAL SERVICES (con)

X. Delivery Confirmation		Transactions (000)	Fee ($)	Revenues (000)	
Standard B:	electronic	4,404.9	0.25	1,101.2	
	manual	2,763.5	0.60	1,658.1	
Priority:	electronic	7,095.0	-	-	
	manual	59,839.1	0.35	20,943.7	
Total		74,102.6		$ 23,703.0	**

Y. Prepaid Reply Mail	Transactions (000)	Fee ($)	Revenues (000)	
Permits	0.4	100	42.3	
Monthly Fee (annualized)	0.4	12,000	5,076.0	
Total	0.846		$ 5,118.3	**

Z. Stamped Cards	Transactions (000)	Fee ($)	Revenues (000)	
	590,659.0	0.01	5,906.6	**

AA. Packaging Service

Size	Fragility	Transactions (000)	Fee ($)	Revenues (000)	
Small	Non-Breakable	347	$ 13.75	$ 4,776	
	Fragile	68	17.00	1,149	
	SPT	6	22.00	130	
Medium	Non-Breakable	1,150	15.50	17,821	
	Fragile	257	19.25	4,938	
	SPT	50	24.25	1,208	
Large	Non-Breakable	369	19.50	7,201	
	Fragile	145	24.50	3,554	
	SPT	76	30.25	2,298	
Total		2,467		$ 43,075	**

AB. Bulk Parcel Return Service	Transactions (000)	Fees ($)	Revenues (000)	
	4,783	$ 1.75	8,370	**

COMPARISON OF MARK-UPS

	R97-1 PRC Recommended Decision	R94-1	R90-1	R87-1	R84-1	R80-1	R77-1	R76-1	R74-1	R71-1
All Mail & Special Services	55.3	56.9	50.0	48	52	27	24	52	69	85
First-Class										
Letters & Sealed Parcels	72.4	74.5	61.7	58	59	25	24	63	87	96
Cards	50.5	36.7	45.9	64	93	33	49	104	129	173
Priority Mail	66.1	97.0	85.4	76	104	58	66	121	132	213
Express Mail	13.6	18.9	28.6	69	139	123	422	--	--	--
Mailgrams	725.5	1.6	2.8	11	81	293	137	--	--	--
Second-Class										
Within County	0.6	2.8	1.5	5	1	0	0	0	1	0
Regular Rate	1.0	16.3	23.2	25	24	21	0	19	17	29
Nonprofit 2/	0.7	4.1	1.1	5	3	0	0	0	0	0
Classroom	-16.3	6.8	--	5	0	0	0	0	0	0
Controlled Circulation	--	--	--	--	--	--	33	49	82	162
Third-Class										
Single Piece	--	4.5	20.1	26	15	0	4	4	4	75
Bulk Rate Regular	52.5	51.1	47.0	41	46	34	20	55	82	104
Bulk Rate Nonprofit	16.8	8.7	0.9	8	0	0	0	0	0	0
Fourth-Class										
Zone Rates Parcel Post	8.0	7.4	11.5	12	16	6	3	21	41	56
Bound Printed Matter	35.6	36.6	44.5	49	74	39	25	63	90	169
Special Rate	5.6	4.6	4.8	6	12	6	2	35	38	54
Library Rate	-17.9	0.8	0.0	1	2	0	0	0	1	--
Government Mail 1/	--	--	--	120	136	132	116	206	229	212
Free for the Blind	--	--	--	--	--	--	--	--	--	--
International Mail	25.3	21.8	48.1	23	48	16	29	57	62	103
Special Services	43.5	34.7	28.2	9	30	21	18	2	8	75

1/ Government Mail distributed to all classes in R90-1

2/ Nonprofit and Classroom combined in R90-1

COMPARISON OF MARK-UP INDICES

	R97-1 PRC Recommended Decision	R94-1	R90-1	R87-1	R84-1	R80-1	R77-1	R76-1	R74-1	R71-1
All Mail & Special Services	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
First-Class										
Letters & Sealed Parcels	1.308	1.310	1.235	1.200	1.135	0.926	1.000	1.210	1.260	1.130
Cards	0.913	0.645	0.919	1.330	1.788	1.222	2.040	2.000	1.870	2.040
Priority Mail	1.195	1.705	1.708	1.580	2.000	2.148	2.750	2.330	1.910	2.510
Express Mail	0.245	0.332	0.572	1.420	2.673	4.556	17.580	--	--	--
Mailgrams	13.114	0.028	0.056	0.230	1.558	10.852	5.710	--	--	--
Second-Class										
Within County	0.010	0.048	0.031	0.110	--	--	--	--	0.010	--
Regular Rate	0.017	0.286	0.465	0.510	0.462	0.778	0.000	0.370	0.250	0.340
Nonprofit 2/	0.012	0.072	0.022	0.100	--	--	--	--	--	--
Classroom	-0.294	0.120	--	0.100	--	--	--	--	--	--
Controlled Circulation	--	--	--	--	--	--	1.380	0.940	1.190	1.480
Third-Class										
Single Piece	--	*0.078*	*0.402*	*0.540*	*0.288*	--	*0.170*	*0.080*	*0.060*	*0.880*
Bulk Rate Regular	0.949	0.899	0.941	0.840	0.885	1.259	0.830	1.060	1.190	1.220
Bulk Rate Nonprofit	0.303	0.152	0.018	0.170	--	--	--	--	--	--
Fourth-Class										
Zone Rates Parcel Post	0.144	0.131	0.230	0.240	0.308	0.222	0.130	0.400	0.590	0.660
Bound Printed Matter	0.643	0.643	0.890	1.020	1.423	1.444	1.040	1.210	1.300	1.990
Special Rate	0.101	0.080	0.097	0.110	0.231	0.222	0.080	0.670	0.550	0.640
Library Rate	-0.324	0.013	0.001	0.030	--	--	--	--	0.010	--
Government Mail 1/	--	--	--	2.480	2.615	4.889	4.830	3.960	3.320	2.490
Free for the Blind	--	--	--	--	--	--	--	--	--	--
International Mail	0.457	0.383	0.962	0.480	0.923	0.593	1.210	1.100	0.900	1.210
Special Services	0.787	0.610	0.564	0.200	0.577	0.778	0.750	0.040	0.120	0.880

1/ Government Mail distributed to all classes in R90-1

2/ Nonprofit and Classroom combined in R90-1

VOLUME MODELS AND SHARE FORECASTING METHODOLOGY

1. The Volume Forecasts

Postal Service witnesses Tolley and Musgrave present two sets of forecasts for the test year corresponding to GFY 1998, the government fiscal year beginning on October 1, 1997 and ending September 30, 1998, and for GFY 1999:

> Before-rates" forecasts based on the assumption that Postal Service rates and rules remain unchanged.
>
> After-rates" forecasts based on the assumption that all of the rate increases proposed by the Postal Service are implemented as of October 1, 1997.

The relationship between the "before-rates" and "after-rates" forecasts is principally determined by a set of estimated price elasticities and by the differences in the price information for the two forecasts.

The forecasts are basically made at the level of mail subclasses and special services. At this level the econometric estimate of price and other elasticities may be applied in a fairly direct manner to yield forecasts of volumes by postal quarters. For First-Class and Standard A mail, volume forecasts by subclass are not sufficient because the mailstreams in these subclasses is composed of mail receiving discounts for different kinds of worksharing, including presorting and prebarcoding for automated processing. Witness Tolley's forecasts for First-Class and Standard A mail further divide these subclasses into various major worksharing categories using share models developed for Docket No. MC95-1 and refit for this proceeding by witness Thress. *See* Exhibit USPS-6A.

As the Commission has come to expect, the Postal Service and its volumes witnesses have complied from the outset with every aspect of the Commission's rules relating to statistical studies and evidence requirements for a general rate proceeding. Postal Service documentation is not only complete, it is also a well-organized and highly-understandable description of subjects that are often quite technical. The high standard adopted by the Postal Service has facilitated the task of evaluating the Service's econometric studies and volume forecasts and has eased the burden on its own witnesses of responding to interrogatories and questions in hearings from other parties.

Since R94-1, the Postal Service has supplied the Commission with Lotus 1-2-3 worksheets that are similar in function to worksheets that the Commission constructed for itself in Docket Nos. R87-1 and R90-1. The Postal Service worksheets have been made available to the Commission early in the proceedings. The worksheets are well-designed and largely self-documented with descriptors and notes that have made it relatively easy to check them for correctness and to modify them to meet the Commission's requirements.

The Commission's recommended rates and fees generally differ from those proposed by the Postal Service. "Before-rates" forecasts were generated using the Postal Service's volume forecast model in LR H-340 filed in response to P.O. Information Request No. 12, Item 8. "After-rates" forecasts based upon the Commission's recommended rates were generated using the Postal Service's volume forecast model in LR H-295 with the following minor corrections:

- Some elements in the spreadsheet that calculates the FWI for Standard A, single piece were corrected based on responses to P.O. Information Request No. 7, Item 7 and P.O. Information Request No. 8, Item 11.
- The calculated discount for Standard A, Nonprofit basic automation flats was corrected according to the response to P.O. Information Request No. 8, Item 14.
- The number of COD transactions valued at less than $50 was corrected in the spreadsheet that calculates the COD FWI. The correct number of transactions was provided in response to P.O. Information Request No. 8, Item 13.

- The Money Order Inquiry fee was corrected in the spreadsheet used to calculate the FWI for money orders. This correction was confirmed in the response to P.O. Information Request No. 9, Item 5.
- A number of volume elements in the spreadsheet used to calculate the FWI for Periodicals, Regular Rate subclass were corrected. These corrections were confirmed in the response to P.O. Information Request No. 9, Items 6.b and 8.
- In the spreadsheet used to calculate the FWIs for Standard (A) Regular mail, the Postal Quarter I volume for 3/5-digit, nonletter minimum rate with no destination entry was changed to match the correct billing determinant volume figure in LR H-178.
- In the spreadsheet used to calculate the FWIs for Periodicals, Within County and Nonprofit, some volume figures were revised to match the billing determinants in LR H-145.
- Five "current" rates were corrected in the spreadsheets used to calculate the FWIs for Parcel Post. The most noticeable correction was made on the rate of DBMC parcels weighing 14 pounds and mailed to Zone 4. The Postal Service inadvertently used a "current" rate of $53.4 instead of $5.34. This correction reduced the Postal Service's proposed DBMC parcel volume by 334 thousand pieces and increased the Priority Mail volume by 93 thousand pieces.

All the above corrections collectively increased the Postal Service's proposed total domestic mail volume in LR H-295 by 0.5 million pieces. The "after-rates" forecasts are presented at the end of this appendix.

The methodology employed by all three of the Postal Service volumes witnesses has been extensively documented in their testimony, in technical appendices to their testimony, in detailed workpapers supporting their testimony, and in a set of library references. *See* USPS-T-6 at 23-25 for a summary of the contents of the workpapers and library references prepared by witnesses Tolley and Thress. Witness Musgrave's models and estimation methodology is identical to the models and methodology employed by both himself and witness Tolley in Docket Nos. R90-1 and R94-1. Witness Musgrave's workpapers are attached to his direct testimony. *See* USPS-T-8. Witness Thress' models and methodology are also derived from earlier research by witness Tolley but incorporate improvements in response to the Commission's findings in R94-1 and MC95-1. Witness Tolley's forecasting methodology has also been improved. His

forecasts for this proceeding are independent of the kind of personal judgments of net trends that the Commission has continuously criticized since R84-1.

The subclass volumes models used by witnesses Thress and Musgrave in their econometric research are structural demand functions with simple mathematical forms incorporating price and income elasticities directly as coefficients. The data selection and estimation techniques are essentially the same from one mail subclass and service category to another. Thus, the parameter estimates have similar economic interpretations and can be expected to have similar statistical properties. In the equation forms used by witnesses Thress and Musgrave, the elasticities of price, income and most other variables are constant over the sample and are expected to remain constant through the test year. This greatly simplifies the forecasting.

The common method used by witnesses Tolley and Musgrave to forecast volumes is to project changes in volumes, quarter-by-quarter, by advancing the forecasts from a base year, beginning in the third postal quarter of 1996. In essence, the process involves computing multipliers for a number of economic processes and then applying the multipliers to the base year values to forecast volumes by postal quarter through the end of 1999. Volumes for government fiscal years (GFYs) 1998 and 1999 are found by aggregating and by making minor adjustments for starting dates. The multipliers for the forecasts can be computed simply from the econometric estimates of the elasticities and the test year to base year ratios of the associated variables.

In principle, the forecasting methodology presents a consistent scheme for combining estimates of the parameters of the demand functions, recent postal volume experience, generally accepted independent forecasts of several economic variables, and the proposed postal rate structure to estimate volumes during the test year. The models and methods used by witnesses Tolley and Musgrave are similar to those that have been presented by the Postal Service and relied upon by the Commission in all rate proceedings since R80-1. The models and methods are similar to those found in the testimony and workpapers of witnesses Tolley and Musgrave in the last omnibus rate proceeding, R94-1 and in the recent mail classification proceeding, MC95-1.

2. The Zoned Rate Problem

Forecasting test year revenues for subclasses with schedules of rates for zones and/or a wide range of graduated piece weights presents the Commission with a special problem. Zoned rates are schedules of postal rates graduated by the distance between the origin and destination offices. The subclasses with zoned rates are Priority mail, Standard (B) Parcel Post and Standard (B) Bound Printed Matter. Zoned rate schedules, and those for several other subclasses, are also graduated by weight. Express mail, Standard(B) Special Rate and Standard(B) Library Rate are graduated only by weight. The special problem that arises for these subclasses is that, in order to estimate the test year revenues for a schedule of rates, it is necessary to project a test year volume for every rate cell in the schedule. The forecast of total revenue for the subclass is derived by multiplying the test year rate by the projected volume for each cell and, then, summing over all of the cells in the rate schedule.

The Commission and the Postal Service have always followed a two-step process for projecting volumes cell by cell for a subclass with a rate schedule. Step one is to forecast total volume for the subclass following the methods described by volumes witnesses. In this proceeding the econometric estimates and forecasting methods followed by the Commission are those of USPS witnesses Tolley, Thress and Musgrave. Step two is to distribute the forecast of total volume to the rate schedule's cells according to the volume proportions observed during the base year. For example, if the billing determinants for the base year show that a cell had 2 percent of the total subclass volume, then the test year projection for that cell is 2 percent of the total volume projected for the test year.

When the rates within a zoned schedule change in different proportions, which is often the case with the Commission's recommended rates, the Commission's procedure can appear to produce anomalous results. The apparent anomaly is that the rate and volume forecast for a cell move in the same direction. Economic demand theory predicts *ceteris paribus* that the volume for a single cell will move in an opposite direction from its

rate. Several of these apparent anomalies can often be observed by comparing the test year forecasts made by the Commission for its recommended rates with the projections of volumes made for the test year with no changes in rates. When examined cell-by-cell, the forecasts and the recommended schedule of rates will occasionally exhibit instances when both the recommended cell rate and its projected volume increase.

Both NDMS witness Haldi and OCA witness O'Bannon consider such instances to be evidence of a flaw in the procedure for projecting cell volumes. Witness O'Bannon claims that they are evidence that the procedure is incompatible with basic economic demand theory while witness Haldi is motivated by the same concern to propose a new procedure that will never allow cell rates and cell volumes to change together in the same direction.

However, witness Haldi's proposed new procedure and witness O'Bannon's analysis make the assumption that volume within a rate cell is dependent only upon the rate that applies within the cell. This assumption appears to the Commission to be a convenient oversimplification that is fundamentally wrong. If demand functions at the cell level were known, the Commission suspects that they would show that the cells of a rate schedule represent postal services with demands that are interdependent, not independent, as assumed by witnesses Haldi and O'Bannon.

Furthermore, witness Haldi's proposed new procedure has the undesirable property that it yields volume projections that, in the aggregate, do not match the volume forecasts for the test year made by either the Commission, for the recommended rates, or by the Postal Service, for its requested rates.

The aggregate demand models for zone-rated subclasses that the Commission relies upon in this proceeding are appropriately applied directly to forecast total subclass volumes. Although the Commission's two-step process can be viewed as using an average rate to generate a forecast of volume in each cell according to a cell-level demand function, it is probably best to regard the process as just the application of a rule for distributing a forecast of total volume to the cells in base year proportions for the

purpose of obtaining a corresponding estimate of total subclass revenue. Viewed in this way it is clear that the total revenue forecasted for a subclass in the test year should correspond as closely as possible to the forecast of total volume. The Commission's two-step process preserves this correspondence whereas witness Haldi's proposed method does not. Therefore, the Commission continues to project cell volumes and revenues for the subclasses with rate schedules using the established method.

Rate Cells Represent Substitutes and Complements. The Commission's understanding of economic demand theory, as it would apply to a single cell, is that volume in a cell is a function of the cell rate and the rates of all important substitutes and complements. This means that there is a basis in economic theory for regarding demand in each cell as a function of the entire schedule of rates.

Where rates vary by weight there exist substitution possibilities among the cells representing different weight categories. Such substitution possibilities become apparent very quickly when the rate schedules create "crossovers" as they have occasionally done between substitutable postal services in the past. Mailers find and exploit crossovers in rates very quickly. Mailers may also be able to make substitutions across geographic zones. For example, a mailer using Parcel Post to deliver goods to customers may have the ability to select shipping points from among warehouses in different zones.

More broadly, the cells in the rate schedule for a single subclass represent generally complementary services. A rate decrease among a group of cells in the schedule will spill over and stimulate volumes in other cells even if none of the rates in the other cells have been changed. This occurs because the volume of mail for the entire subclass responds generally to the overall level of rates for the subclass.

The aggregate relationships between the subclass volumes and fixed weight indices constructed from the rate schedules are known with some accuracy from the econometric research of Service witnesses Thress and Musgrave. For example, the estimate of the own-price elasticity of Priority Mail from witness Musgrave's research is

-0.737. The fixed-weight index rate for Priority Mail was computed using weights corresponding to the base-year volume proportions in the cells of the rate schedule.

There is nothing in the theory of demand or in the Commission's understanding of the behavior of volumes at the cell level to support the assumption made by witness O'Bannon "that each Postal Service good's cell within a category represents a good that is unrelated to every other cell in that category." Tr. 25/13480. "Each cell is neither a substitute nor a complement for any other cell in that category." Ibid., n.6. Witness Haldi makes the same assumption when he proposes "to apply the own-price elasticity to the TYBR volume in each rate cell and the percentage change in rate proposed for each cell." His formula for making the application shows that the forecast of cell volume is assumed to be a function only of the percentage change in rate for the cell. Tr. 20/10318.

There are no actual anomalies in the Commission's projections of cell volumes for zone-rated subclasses. The apparent anomalies cited by witnesses Haldi and O'Bannon disappear once it is recognized that the volume projections made by the Commission for the individual cells in the rate schedule incorporate the effects of the changes made in all of the rates in the schedule as represented by the fixed-weight price index, and not just the cell's own rate. The Commission's two-step process reflects the assumption that the predominant characteristic of demand behavior at the cell level is complementarity. The volume in every cell is related to the rates in all of the cells of the schedule. If a rate in a single cell increases, the volumes projected for all of the cells decrease in the same proportion.

Commission Analysis of Witness Haldi's Proposal. NDMS witness Haldi proposes that the Commission project cell volumes for Priority Mail by applying the elasticity estimated by witness Musgrave cell by cell using the percentage change in the rate for each cell. The method is described in detail in an appendix to his direct testimony. Id. at 10381-85.

There are several mechanical problems with witness Haldi's method that might be corrected by making minor modifications in the method. First, the method overlooks the

fact that Priority Mail volumes are also weakly related to Parcel Post rates in witness Musgrave's econometric demand model. Consequently, the adjustment of test-year before-rates (TYBR) volumes cannot be made entirely as he does, using just the percentage changes in Priority Mail rates. Second, the volumes forecasts, including the TYBR volumes, are forecast by postal quarters and then combined by Government Fiscal Year in the Commission's forecasting methodology. Witness Haldi's method seriously oversimplifies the forecasting methodology by applying an "effective TY own-price elasticity" to aggregate TYBR volume. Third, the aggregate demand functions being used by witnesses Tolley, Thress and Musgrave are nonlinear in prices, so the aggregation of cell volumes and revenues as performed by witness Haldi is inconsistent except when all of the elements in the rate matrix change proportionately.

A more important difficulty is that witness Haldi's method does not exactly reproduce the aggregate volume forecasts that the Commission derives from witness Musgrave's econometric model and forecasting methodology. For the Postal Service's proposed rates the difference is so small that it is inconsequential. Id. at 10319. However, there is no assurance that the difference would remain small for recommended rates that differed substantially from those proposed by the Service.

Although witness Haldi's method might be changed and adapted by the Commission to project volumes by cell for all of the zone-rated subclasses, the Commission sees no advantage in doing so. The anomalies that the method is designed to correct are the result of a faulty analysis. The method does not appear to be any less arbitrary than the Commission's two-step process described above and it depends upon a misapplication of witness Musgrave's own-price elasticity for Priority Mail. It is important to remember the exact definition of the own-price elasticity that witness Haldi borrows. It is the estimated elasticity of the total volume of Priority Mail with respect to the fixed weight index of Priority Mail rates. It is *not* an estimate of the elasticity of the volume for a single rate cell with respect to the rate that applies to the cell. As witness Haldi states in his direct testimony "No basis exists for estimating different elasticities for individual cells". The Commission finds no basis for using own-price elasticities taken from the aggregate

demand equations of witnesses Thress and Musgrave in the manner proposed by witness Haldi.

Research Is Needed. Neither the Commission's process nor witness Haldi's proposal are based upon empirical evidence. Ultimately, both make the heroic assumption that a single rate with a single associated elasticity can successfully represent the effects on cell volumes of changes in an entire matrix of interrelated rates. This assumption plays an essential role in the Commission's forecasts of revenues for Priority Mail, Express Mail and all subclasses of Standard(B) Mail. The Commission invites the Postal Service and other parties to conduct empirical studies and to suggest improvements to the two-step process relied upon in this proceeding.

3. Improvements in Volume Estimation

An aspect of witness Tolley's econometric and forecasting practice that the Commission has found particularly troubling in the past still partially characterizes his forecasting practice in R97-1. In the past, many of the demand models that emerged from the econometric studies were fundamentally different from the models that witness Tolley actually employed to generate the Postal Service's volume forecasts. Specifically, the volume forecasts included a "net trend" that was not present in the estimated demand equations. Most often the net trend was derived from the results of an unusual forecast error analysis. Sometimes witness Tolley replaced even these "mechanical" net trends with subjective estimates. Net trends have never been used by witness Musgrave to forecast Priority Mail and Express Mail volumes.

The Commission has provided two basic grounds for its objections to the net trends found in the Postal Service forecasts. First, witness Tolley's forecast error analysis constituted an unusual and *ad hoc* estimation technique. It is employed in place of generally accepted econometric methods for estimating trends. The generally accepted econometric method for including a recent trend in the forecasts would be to define suitable terms to represent the trend in the model as it is estimated and then to use the

resulting estimates of the net trend to make the forecasts. Second, the Commission has no confidence in witness Tolley's purely judgmental estimates of net trends. Witness Tolley's subjective estimates for several subclasses in R90-1 and R94-1 did not uniformly and reliably improve his forecasts. In R90-1, the Commission found that where witness Tolley made subjective adjustments to net trends, his adjustments increased, rather than reduced, the before-rates forecast errors. These judgmentally adjusted net trends were replaced. Witness Tolley continued in R94-1 to install judgmental net trends. In the four specific instances in which witness Tolley imposed his own judgments, three of his judgmental net trends reduced the errors in his before-rates forecasts and one increased the errors. The Commission left the judgmental net trends in the forecasts for the recommended rates.

The Commission's view of the proper role of judgment in making econometrically-based forecasts was stated in the Commission's R94-1 Opinion and Recommended Decision. *See* PRC Op. R94-1, paras. 2124-2126.

> The Commission has always known that judgments are sometimes necessary and/or desirable. Expert judgments are commonly made by econometricians in the specification of equations to be fit, the identification of variables to be included, the selection of a sample, the choice of an estimation method, and the interpretation of results, including statistical tests of significance. In addition, there are circumstances that can make judgments necessary or preferable to forecasts derived from a statistical fit of an economic model. There are three such circumstances: (1) the prerequisites for the successful application of econometric methods do not always exist; (2) the application of econometric methods may be ineffective, leaving estimates of parameters and forecasts that are incompatible with basic economic theory; and (3) forecasts based on historical data may not be an acceptable guide to the future if the conditions that underlie the sample have changed.

Id., para. 2125.

In summary, the Commission recognizes that econometric models depend upon the expert judgments of the econometrician. If a net trend is needed to correctly model the data during the most recent time periods of the sample, then it should be the

econometrician who specifies the form of the trend and estimates its value along with the other parameters of the model. The Commission expects to find noneconometric net trends included in forecasted volumes only when the econometrics is impractical, fails to produce a usable model or is inapplicable to future conditions.

Witness Tolley's responses to interrogatories in this proceeding indicate that the Commission and the Postal Service may have moved some distance toward a consensus on the use of net trends in the volumes forecasts. In response to an OCA interrogatory, witness Tolley states "my belief – shared by the Postal Service – is that econometric estimation is only one of many sources of evidence throwing light on what the future holds. According to this view, forecasting is a matter of bringing together all available evidence, ... and making the best prediction possible based on all of the evidence." Tr. 13/6913. This is a view that is also shared by the Commission but with the important caveat that the forecast error analyses performed by witness Tolley do not examine any new additional information. They are merely a reexamination of residuals over the more recent time periods in the sample. If the demand models have been properly specified and fit to the data, the forecast errors analyzed by witness Tolley should be indistinguishable from random numbers. Witness Tolley continues, "I would agree with the PRC that it would be preferable to avoid the use of 'net trends' and an undue use of 'judgment' (as the term is used by the PRC) if possible. ... For this case, I have made a concerted effort to limit my use of net trends and to rely upon objective calculations to derive net trends in those instances where they are used." Id. at 6914. (emphasis omitted)

Many of the Postal Service's demand equations now have trend terms that are included in the conventional way when the equations are estimated by witness Thress. Several of these estimated trends appear to have been included properly in witness Tolley's First-Class and Standard A mail forecasts. None of the Postal Service's forecasts of volumes for the test year appear to depend upon a purely subjective estimate of a net trend. However, there remain many instances involving mostly smaller

subclasses where witness Tolley has resorted to his forecast error analysis programs to derive auxiliary net trends in the old way.

Five of the exceptions consist of two categories of private First-Class cards and three categories of parcel post. According to witness Tolley "these exceptions are made because the level of detail at which forecasts are made in these cases is finer than the level of detail at which the corresponding demand equations are modeled." Id. at 6915. Since the trends for these categories cannot be derived from the econometrics, the Commission accepts witness Tolley's net trends for these categories.

Witness Tolley has also inserted net trends from his forecast error analysis programs in the forecasts for Periodicals Regular, Periodicals Within-County, Periodicals Nonprofit and Money Orders. No trend terms are present in the demand equations for these subclasses as they are fit by witness Thress. *See* USPS-T-7 at 52-54. Witness Tolley replaces estimated trend terms with his own non-econometric net trends in Mailgrams, Postal Penalty mail, Free-for-the-Blind mail, Registered mail, Insured mail, Certified mail and COD. In every instance, the estimated trend that has been replaced by witness Tolley was estimated by witness Thress from the sample with high accuracy. All but one of the t-values for the coefficients associated with the replaced trends exceed six in absolute value; the smallest is –3.029. *See* USPS-T-7 at 107-113. The net trends used by witness Tolley are described in his direct testimony as mechanical net trends derived from the last four or five years of the sample.

None of these additions to and substitutions for econometric estimates is good forecasting practice in the opinion of the Commission. It would not have been difficult for witness Thress to modify his demand equations for these subclasses to install a variable to represent trend over the last four or five years of the sample. Adding the net trends when the equations are econometrically estimated has a number of important advantages over witness Tolley's *ad hoc* procedure. First, if the net trends are truly important then their omission from witness Thress's models may leave an omitted variables bias in the coefficients of the remaining variables. Second, by significantly improving the equation fits, the added net trends will tend to improve the statistical

properties of all of the other estimated coefficients. Third, the statistical properties of the estimated net trends would be known routinely from their t-values and the elements of the covariance matrices of the estimates. Fourth, the estimated net trends would inherit all of the desirable properties of constrained generalized least-squares estimates. Specifically, they would become best linear unbiased estimates subject to the accuracy of the assumed information. Finally, it would deprive witness Tolley of the excuse he has used so often to avoid answering questions about the accuracy of his forecasts. For example, "The methodology with which I forecast parcel post volume does not lend itself to statistical measures of uncertainty. ... I include non-econometric net trends in forecasting each of these categories. Because these net trends are not estimated statistically, there are no estimated standard errors for them." Tr. 13/6924.

There were several omissions in the volume and revenue forecasts noted by the Commission in R94-1. Forecasts of volumes for International Mail, Stamped Envelopes, Lock Box/Caller Service, and various types of postal fees were are not among the forecasts submitted by Postal Service witnesses Tolley and Musgrave, although forecasts of volumes and revenues in these categories are needed to develop satisfactory forecasts of postal revenues. Rates for Stamped Envelopes, Lock Box/Caller Service and postal fees for domestic mail are within the purview of this Commission. International Mail rates are not recommended by the Commission. These gaps in the Postal Service's volumes presentation have now been filled by appropriate testimony from other Service witnesses.

The time that has elapsed since the filing of the current postal rate case has provided the Commission with an opportunity to compare the before-rates forecasts made by witnesses Tolley and Musgrave with four postal quarters of actual volumes. In Table H-1, the revised "before-rates" forecasts from witness Tolley's testimony are compared directly to the volumes shown in the Postal Service's quarterly reports of Revenue Pieces and Weight By Classes of Mail and Special Services. These reports have been submitted periodically during the current proceeding.

Table H-1
Before Rates Forecast Compared with Actual Volumes

(Pieces in Thousands)

Mail Class	1997 PQ 3			1997 PQ 4			1998 PQ 1			1998 PQ 2		
	Forecast	Actual	Percent Difference	Forecast	Actual	Percent Difference	Forecast	Actual	Percent Difference	Forecast	Actual	Percent Difference
First-Class Mail:												
Single-Piece Letters	12,197,561	12,427,527	-1.9%	15,866,970	15,390,693	3.1%	12,716,940	12,488,937	1.8%	13,333,975	13,240,050	0.7%
Presort Letters	1,374,162	1,291,996	6.4%	1,629,207	1,508,944	8.0%	1,263,391	1,138,597	11.0%	1,313,068	1,137,340	15.5%
Automation Letters	8,061,819	8,129,825	-0.8%	9,929,908	10,463,408	-5.1%	7,979,642	8,373,400	-4.7%	8,594,332	8,715,082	-1.4%
Total Presort Letters	9,435,982	9,421,821	0.2%	11,559,115	11,972,352	-3.5%	9,243,033	9,511,997	-2.8%	9,907,400	9,852,422	0.6%
Total Letters	21,633,543	21,849,348	-1.0%	27,426,085	27,363,045	0.2%	21,959,973	22,000,934	-0.2%	23,241,375	23,092,472	0.6%
Single-Piece Cards	691,881	704,684	-1.8%	911,638	824,386	10.6%	772,931	769,602	0.4%	710,134	622,175	14.1%
Presort Post Cards	147,450	127,899	15.3%	194,837	155,955	24.9%	162,187	135,111	20.0%	144,789	133,683	8.3%
Automation Post Cards	386,812	390,160	-0.9%	528,776	537,904	-1.7%	454,200	414,088	9.7%	418,450	519,738	-19.5%
Total Presort Cards	534,263	518,059	3.1%	723,613	693,859	4.3%	616,387	549,199	12.2%	563,239	653,421	-13.8%
Total Cards	1,226,144	1,222,743	0.3%	1,635,251	1,518,245	7.7%	1,389,318	1,318,801	5.3%	1,273,373	1,275,596	-0.2%
Total First Class	22,859,687	23,072,091	-0.9%	29,061,336	28,881,290	0.6%	23,349,291	23,319,735	0.1%	24,514,748	24,368,068	0.6%
Priority Mail	249,876	242,759	2.9%	317,773	331,699	-4.2%	262,717	271,900	-3.4%	260,086	282,036	-7.8%
Express Mail	14,380	14,634	-1.7%	18,672	20,807	-10.3%	13,865	14,322	-3.2%	15,167	15,567	-2.6%
Mailgrams	1,349	957	41.0%	1,290	1,247	3.4%	1,013	1,001	1.2%	1,384	1,055	31.2%
Periodicals:												
Within County	216,097	219,449	-1.5%	279,588	282,192	-0.9%	208,627	216,872	-3.8%	203,536	206,739	-1.5%
Regular Rate	1,725,112	1,744,687	-1.1%	2,113,901	2,164,416	-2.3%	1,617,112	1,636,804	-1.2%	1,635,789	1,641,081	-0.3%
Nonprofit	538,006	509,192	5.7%	610,768	589,948	3.5%	525,342	530,338	-0.9%	508,780	477,267	6.6%
Classroom	15,595	14,240	9.5%	15,393	17,941	-14.2%	13,941	12,922	7.9%	12,227	16,015	-23.7%
Total Periodicals	2,494,810	2,487,568	0.3%	3,019,650	3,054,497	-1.1%	2,365,021	2,396,936	-1.3%	2,360,332	2,341,102	0.8%
Standard Mail (A):												
Single Piece	39,775	38,342	3.7%	46,537	54,736	-15.0%	41,157	40,582	1.4%	35,093	24,157	45.3%
Regular - Presort	1,934,022	1,832,038	5.6%	2,480,824	2,126,058	16.7%	2,237,748	1,824,314	22.7%	1,941,456	1,538,858	26.2%
- Automation	5,514,758	5,705,997	-3.4%	7,079,505	7,562,592	-6.4%	6,390,372	6,688,968	-4.5%	5,548,109	6,070,393	-8.6%
Total Regular	7,448,780	7,538,035	-1.2%	9,560,329	9,688,650	-1.3%	8,628,120	8,513,282	1.3%	7,489,565	7,609,251	-1.6%
Regular ECR	7,099,131	7,201,744	-1.4%	8,996,783	9,211,143	-2.3%	8,555,406	8,754,698	-2.3%	7,195,030	7,277,134	-1.1%
Total Bulk Rate Regular	14,547,911	14,739,779	-1.3%	18,557,112	18,899,793	-1.8%	17,183,526	17,267,980	-0.5%	14,684,595	14,886,385	-1.4%
Nonprofit - Presort	946,830	998,810	-5.2%	1,121,053	1,101,371	1.8%	1,108,104	962,460	15.1%	909,848	853,919	6.5%
- Automation	1,328,018	1,354,039	-1.9%	1,608,112	1,751,779	-8.2%	1,609,990	1,824,480	-11.8%	1,328,630	1,558,710	-14.8%
Total Nonprofit	2,274,848	2,352,849	-3.3%	2,729,165	2,853,150	-4.3%	2,718,094	2,786,940	-2.5%	2,238,478	2,412,629	-7.2%
Nonprofit ECR	706,462	578,626	22.1%	847,995	769,710	10.2%	842,688	744,508	13.2%	692,889	574,057	20.7%
Total Bulk Rate Nonprofit	2,981,310	2,931,475	1.7%	3,577,160	3,622,860	-1.3%	3,560,782	3,531,448	0.8%	2,931,367	2,986,686	-1.9%
Total Standard Mail (A)	17,568,997	17,709,596	-0.8%	22,180,809	22,577,389	-1.8%	20,785,466	20,840,010	-0.3%	17,651,054	17,897,228	-1.4%
Standard Mail (B):												
Parcel Post	51,535	48,904	5.4%	60,641	70,534	-14.0%	63,237	69,948	-9.6%	59,409	67,554	-12.1%
Bound Printed Matter	109,305	98,747	10.7%	183,214	173,643	5.5%	147,784	117,786	25.5%	113,313	121,257	-6.6%
Special Rate	43,891	49,465	-11.3%	52,739	57,311	-8.0%	58,397	49,146	18.8%	43,823	39,210	11.8%
Library Rate	6,943	6,688	3.8%	7,394	7,532	-1.8%	8,409	6,803	23.6%	6,920	5,735	20.7%
Total Standard Mail (B)	211,674	203,804	3.9%	303,988	309,020	-1.6%	277,826	243,683	14.0%	223,465	233,756	-4.4%
USPS Penalty Mail	87,071	91,581	-4.9%	84,970	112,711	-24.6%	72,747	88,101	-17.4%	72,842	83,411	-12.7%
Free-for-the-Blind Mail	13,441	12,139	10.7%	15,168	17,940	-15.5%	14,692	13,398	9.7%	11,028	10,959	0.6%
TOTAL DOMESTIC MAIL	43,501,284	43,835,129	-0.8%	55,003,655	55,306,600	-0.5%	47,142,639	47,189,086	-0.1%	45,110,106	45,233,182	-0.3%
International Mail	208,002	242,070	-14.1%	275,268	280,474	-1.9%	244,666	215,465	13.6%	269,057	263,829	2.0%
TOTAL ALL MAIL	43,709,287	44,077,199	-0.8%	55,278,922	55,587,074	-0.6%	47,387,304	47,404,551	0.0%	45,379,164	45,497,011	-0.3%
Special Services:												
Registered Mail	4,234	3,739	13.3%	5,241	4,659	12.5%	3,944	3,631	8.6%	3,590	3,562	0.8%
Insured Mail	6,352	6,441	-1.4%	8,556	10,594	-19.2%	8,406	7,752	8.4%	7,783	11,040	-29.5%
Certified Mail	74,650	69,918	6.8%	84,330	85,841	-1.8%	73,955	68,286	8.3%	63,194	55,030	14.8%
Collect-On-Delivery	1,021	1,051	-2.8%	1,284	1,559	-17.6%	943	1,034	-8.8%	908	909	-0.1%
Money Orders	53,581	50,543	6.0%	71,156	63,542	12.0%	51,166	47,462	7.8%	51,461	45,948	12.0%
Total Special Services	139,837	131,692	6.2%	170,566	166,195	2.6%	138,413	128,165	8.0%	126,936	116,489	9.0%

The before-rates forecasts continue to exhibit characteristics and patterns that the Commission has come to expect from similar comparisons with observed volumes in earlier proceedings. The comparison reveals again that an excellent overall performance masks large-but-offsetting forecast errors among the individual categories. Through the last two postal quarters of 1997 and the first two quarters of 1998, aggregate volume is always underpredicted by less than one percent. However, the errors for most individual mail subclasses are much larger in magnitude. Typically, the percentage errors for the major categories of First-Class and Standard A Mail lie within a range of several percent. The errors tend to be larger in magnitude for the smaller subclasses of mail. On the whole the errors exhibit a pattern that could be explained by a fair amount of sampling error in the RPW statistics. Sampling errors would affect the RPW statistics for the smaller mail categories more severely that the larger or aggregated categories.

As in most earlier proceedings, the Commission finds that a comparison of predicted to observed overall volumes of mail does not support the hypothesis that the forecasts submitted by the Postal Service will systematically understate volumes during the test year. That is, the forecasts submitted by the Postal Service do not appear to have any overall bias.

Most of the differences between forecast and observed volumes do not appear to be entirely random from quarter to quarter. There is an evident tendency for differences to persist from quarter to quarter. For example, the forecasts for Presorted Post Cards exceeded actual volumes by 15.3, 24.9, 20.0 and 8.3 percent in successive quarters. This tendency for differences to persist may be explained in part by properties of the forecasting methodology used by Postal Service witnesses. This methodology forecasts off a base year rather than off the mean of the sample. Errors on the base year's RPW statistics are incorporated in the forecasts for the postal quarters that follow. Tr. 13/6893-95. For example, if the RPW volumes for Presorted Post Cards were high by 15 percent in the base year, this would be carried into the forecasts as a tendency for

the quarterly forecasts of volumes to exceed actual volumes by 15 percent. Persistent differences may also be caused by incorrect net trends.

In the past, Postal Service volume witnesses have been reluctant to provide the Commission with specific measures of the uncertainty in their forecasts. However, in the current proceeding witness Musgrave has provided ranges for his forecasts of Priority and Express Mail volumes. For Priority Mail witness Musgrave expects the "current forecast" to be within 7 percent of the actual value. Tr. 4/1334. For Express Mail he expects the "current forecast" to be within 11 percent of the actual value. Id. at 1332. All but one of the quarterly volume forecasts for these subclasses has stayed within witness Musgrave's ranges. Witness Tolley is still reluctant to provide quantitative statements, such as ranges, to describe the reliability he places in his forecasts. Tr. 13/6924. However, he believes that the forecasts for the current proceeding "will prove to be at least as accurate and probably more accurate than the forecasts which I presented in Docket No. R94-1". Id. at 6925. In R94-1 the Commission concluded that the percentage errors for major mail categories were within a range of plus or minus 3 percent.

In MC95-1, R94-1 and R87-1, the Commission concluded that the Postal Service's forecast methodology was sufficiently accurate to be relied upon and did not attempt any updates or corrections. In R90-1, the Commission found that the forecast errors among the individual rate categories were too large to be ignored and made several corrections and updates to improve the forecasts. The changes made by the Commission in R90-1 were to eliminate several of witness Tolley's judgmental net trends, to advance the base year for the forecasts, to employ a later revision of the Data Resources Inc. (DRI) forecast of economic variables for the test year, to replace a defective prediction of International Mail volume during the test year, and to alter the fixed weight price indices to reflect several discount changes proposed by the Service and/or recommended by the Commission. In R84-1, the Postal Service's models were so seriously defective that the Commission was obliged to conduct a major revision of the forecasts. This was done mainly by advancing the base year and rejecting many of witness Tolley's net trends. For this proceeding the Commission finds that it is unnecessary to apply all current

information, unavailable to witnesses Tolley and Musgrave at the time they prepared their forecasts, to correct and update the forecasts of volumes submitted by the Postal Service.

4. The Demand Model - Overview

In the early history of the Commission, the volume and revenue forecasts provided by the Postal Service on the occasion of a general rate case were almost entirely judgmental. Now, and for many years past, the Commission's rules encourage the use of economic models, historical data, and econometric methods, and discourage reliance upon *ad hoc* methods and unsupported judgment in the preparation of forecasts. In every general rate proceeding since R80-1, the Postal Service and the Commission have relied upon the econometric research of witness Tolley. Since R90-1, the Service and the Commission have relied upon similar research for Priority and Express Mail conducted by witness Musgrave.

The demand models used by witnesses Thress and Musgrave in this proceeding are recognizable variants of earlier models developed by witness Tolley. The models offered by witness Musgrave are not materially different from similar models for Priority and Express Mail that the Commission relied upon in R94-1. Witness Musgrave's models and estimation methods are still very much as described by the Commission in the R94-1 Opinion and Recommended Decision. On the other hand, witness Thress has conducted a thorough and effective revision of witness Tolley's models and econometric practice. Many of these revisions correct weaknesses and defects noted by the Commission in R94-1. In other respects, witness Thress' revisions appear to be the result of a wide-ranging and open econometric reexploration of the underlying economic theory, the identification of suitable variables and the selection of appropriate estimation techniques for the Postal Service's volumes models. It is exactly the kind of econometric research that the *Commission's Rules of Practice and Procedure* for statistical evidence are intended to encourage.

The major revisions to the models and econometric methodology are as follows:

- New Demand Theories — The relevant economic theory underlying the specification of the demand models has been reexamined and changed. Witness Tolley uniformly relied upon consumer demand theory as the underlying economic theory for his models despite the long-known fact that most mail is business-driven. Witness Thress' models for First-Class Mail and Special Services continue to rely upon conventional demand theory; however, his demand equations for Periodical mail, Standard B mail and Standard A nonbulk mail now are modeled as derived demand functions. Periodical mail is derived from consumer demand for magazines and newspapers; Standard A bulk mail is derived from expenditures for advertising and the shares that are won by various categories of direct mail; Standard B nonbulk mail is a demand for delivery services that derives from the demand for the products being delivered.
- New Demand Equations — Single-Piece and Workshared First-Class letters have been separated. This separation is strongly suggested by witness Thress' reconsideration of the underlying demand theory. According to witness Thress, First-Class letters can be broadly divided into two categories of mail, these are individual correspondence and bulk transactions. Individual correspondence is sent a few pieces at a time and is not very suitable for worksharing, while bulk transactions consist of bills and statements, advertising and announcements. Bulk transactions are candidates for worksharing. Witness Thress' estimates confirm the validity of his economics. The equations he fits for single-piece and worksharing First-Class letters describe somewhat different demand functions for the two categories. Apparently workshared volumes are more price and income sensitive than single-piece volumes.
- New Economic Variables — New demand theories suggest new explanatory variables. Where witness Thress has shifted the underlying economic demand theory he has appropriately conducted research with demand equations that include variables that reflect his reinterpretations. He has also conducted an open-minded reexamination of the variables that appear in the demand equations that continue to rely upon consumer demand theory. Virtually all of the demand equations for this proceeding include explanatory economic variables that have changed somewhat from those used by witness Tolley in R94-1. The overall impression left by witness Thress' research is that of a fairly careful housecleaning. Old variables that were no longer compatible with the new demand theories or were not carrying their weight statistically have been dropped. In their places are new variables, suggested by the new theories, and generally making a substantial improvement to the predictive power of the equations.
- New Dummy Variables — A constellation of new variables, mostly dummies of one kind or another, have been introduced to capture the effects of changes that have been made over time in the Postal Service's rules, mail classifications, rate

and discount structures and other kinds of one-time changes in the structural demand equations. For example, the demand equation for First-Class private cards includes a dummy to capture a change in postal regulations made in 1979Q4, restricting postal cards with holes punched in them, and another "crossover" dummy for the period 1988Q4 through 1991Q3 when First-Class 3/5-digit card rates were lower than the rates for third-class 3/5-digit presort bulk regular mail.

- New Seasonals — Witness Thress' demand equations incorporate a completely new system for representing seasonal variations in postal volumes. In Docket Nos. R90-1 and R94-1, the Commission pointed out that a novel method for treating seasonal effects, used by both witnesses Tolley and Musgrave, violated an assumption that is fundamental to econometric estimation methods. Both witnesses used a seasonal index derived by seasonally adjusting residuals using a process that could not perfectly separate seasonal effects from the equation error. In effect, their seasonals partly reintroduced the error as an explanatory variable. *See* R94-1 Decision, Appendix H at 18. Witness Thress' new seasonals correct this major defect in the previous treatment of seasonals. Furthermore, witness Thress' redefinitions of the seasonals is effective as a way to estimate the purely seasonal components of postal volumes. [Witness Musgrave's estimates for Priority and Express Mail continue to rely upon the defective seasonal variables used in R94-1 and R90-1.]
- Removal of the "Z-Variables" — Witness Tolley's equations made heavy use of "z-variables" introduced into his demand equations to represent logistic trends associated with the introduction of various kinds of presort discounts. The difficulty that arises with the z-variables is not a specification issue as witness Tolley's response to OCA/USPS-T-6-1 would suggest. If a z-variable, as described by witness Tolley, could be observed, there would be no reason not to include it in the econometrics. The problem with witness Tolley's z-variables are that they must be estimated in advance from the sample. Witness Thress has removed the z-variable from the equations for First-Class letters and Standard A bulk mail. This is usually done in conjunction with a truncation of the sample to exclude the late 1970s and early 1980s when presort discounts were introduced for First- and third-class mail. Witness Tolley and the Commission agree that "it would be preferable to not have to include z-variables in the econometric equations...." Tr. 13/6919.
- Constrained Generalized Least Squares Estimation — Witness Thress' most important and most difficult revision is of the econometric estimation methodology. By R94-1 witness Tolley's and, to a lesser extent, witness Musgrave's econometric methodology had evolved into a technique described by the Commission as "a sequence of steps which constitute one of the longest, most complex, tedious and inelegant estimation processes ever devised for applied econometric research." More important, it obscured the properties of the

> estimates. *See* PRC Op. R94-1, Appendix H at 17. Witness Thress has succeeded in combining the steps into a single constrained generalized least-squares estimator. *See* USPS-T-7 at 133-159. The properties of the constrained generalized least-squares estimator are known and they are highly desirable. The estimator is a best linear unbiased estimator subject to the accuracy of several kinds of assumed information. The covariances and other characteristics of the estimates can be calculated from formulas analogous to those for the familiar least-squares estimator. The practical effect of witness Thress' reform is that the Commission can now rely upon the measures of goodness-of–fit, the t-values and other statistics as accurate indications of the statistical properties of the estimated demand equations under the assumption that the information embedded in several matrices in the estimator is correct.

Witness Thress's revisions have produced several benefits, one major disadvantage and one disquieting discovery. First, the benefits. Most of the goodness-of-fit statistics such as the adjusted R-squares, indicate that witness Thress' estimated demand equations are better statistical explanations of postal volumes than comparable equations from witness Tolley's R94-1 testimony. As a whole, the revised equations should better serve the Commission's needs for forecasts and estimates of price elasticities. The equations also seem to need fewer corrections for autocorrelated errors. This is reassuring because the presence of autocorrelated residuals is often a signal of mispecification in the equation. The revised equations include statistically significant coefficients for a long list of new explanatory variables. Witness Thress' research plan was well-conceived and thorough. Many new economic interactions have been detected in the sample and added to the Postal Service's and the Commission's understanding of the determinants of mail volumes. In particular, witness Thress' revisions help make clear the connections between postal volumes and activity in the advertising and publishing sectors. The revisions also go a long way towards sorting out the effects of worksharing discounts and various classification/rule changes on volumes.

The major disadvantage to witness Thress' revisions is a practical one. In order to make forecasts for the test year and the year after, it is now necessary to have at hand general economic forecasts of a much longer and unusual set of economic variables. In the past, witness Tolley's models related postal volumes to general economic conditions through a parsimonious set of macroeconomic variables. Projections for a similar set are

still required to make the forecasts. Witness Tolley used projections taken from a recognized source, DRI/McGraw-Hill's February 1997 25-year forecast called TREND25YR0297. *See* USPS-T-6 Workpaper 1. If necessary, as it was for Docket No. R90-1, these projections can be updated during the course of the proceedings. Tr. 13/6896-97. However, it is now also necessary to project a fairly long list of more specialized economic variables that are not routinely included in the DRI/McGraw-Hill economic forecasts. Some of these additional variables have been added over the years by witnesses Tolley and Musgrave. Many more were added by witness Thress' revisions. Most of the new economic variables (and some of the older ones) are forecast by naïve methods that do not relate them specifically to the DRI/McGraw-Hill economic forecasts. Id. at 6898-908.

One would hope that witness Thress' revisions would provide reliable estimates of postal own-price and cross-price elasticities. The disquieting discovery is that usually they do not. In past proceedings the Commission was unwilling to place much faith in witness Tolley's statistical measures of reliability and goodness-of-fit. The reason is stated clearly in the Commission's R94-1 Opinion.

> Most conventional methods, such as least-squares, also provide the user with statistics that can be used to judge the reliability of parameter estimates and forecasts. Although many of the goodness-of-fit statistics that are commonplace for least-squares estimates may be found in the direct testimony and workpapers of Postal Service witnesses, the Commission has found that they are incomplete and unreliable as measures of the quality of the estimates. To rely upon them requires the assumption that the estimates retain the properties of estimates that have been produced by conventional econometric methods.

PRC Op. R94-1, para. 2119.

The Commission has long suspected that the statistical reliability of the elasticity estimates supplied by Postal Service witnesses in its proceedings was poor. Witness Thress' estimation methodology conforms to accepted econometric practice so the Commission regards his t-values and other statistics as acceptable measures of

reliability and goodness-of-fit. In general, they prove what the Commission has so long suspected. Many of the Postal Services' price elasticities, including those for most of the larger subclasses, are only known within wide limits. Ninety percent confidence limits for all of his own- and cross-price elasticities were provided by witness Thress in response to an NAA interrogatory. The confidence limits for the own-price elasticities for the larger subclasses are as shown below. Tr. 13/6754-55.

Table H-2
Ninety Percent Confidence Limits for Selected Own-Price Elasticity Estimates

Subclass	Lower Bound	Elasticity	Upper Bound
Single-Piece First-Class Letters	-0.374104	-0.189240	-0.004376
Workshared First-Class Letters	-0.571806	-0.289173	-0.006540
Private First-Class Cards	-1.157685	-0.943717	-0.729749
Periodical Regular Rate	-0.229582	-0.143253	-0.056924
Periodical Within-County	-0.656614	-0.529948	-0.403282
Standard A Regular	-0.554443	-0.381623	-0.208803
Standard A ECR Mail	-0.869705	-0.597747	-0.325789
Standard A Bulk Nonprofit	-0.181325	-0.135814	-0.090303
Standard A Parcel Post	-1.246106	-0.964630	-0.683154
Standard A Bound Printed Matter	-0.517483	-0.335169	-0.152855

To apply the simplest formula for Ramsey pricing, the inverse elasticity rule, one needs estimates of the marginal costs and own-price elasticities. For the full Ramsey analysis, one needs estimates of all of the important cross-price elasticities as well. In the past the Commission has rejected rates calculated by applying the Ramsey formulas partly because it lacked the necessary confidence in the own-price elasticity estimates. The Commission's confidence in the estimates for cross-price elasticities is even lower. In many cases the cross-price estimates amount to little more than the applied judgments of witnesses Tolley and Thress. Witness Thress' confidence intervals excerpted above were specifically linked in the NAA interrogatory to witness Bernstein's use of the elasticities for his Ramsey pricing analysis. It is clear to the Commission that Postal Service witnesses are not in a position to identify second-best efficient postal rates (Ramsey prices) with sufficient accuracy to provide a basis for setting rates.

In R87-1, witness Hausman criticized witness Tolley's work for employing stochastic prior information in a nonstochastic fashion. This technical problem was corrected in R94-1 with respect to the Permanent Income elasticities and several of the cross-price

elasticities. The Permanent Income elasticities are now entered as stochastic restrictions rather than as fixed values. In effect, the estimation methodology now acknowledges the fact that these parameters cannot be estimated with certainty from prior information. Several cross-price elasticities of Single-Piece and Workshared First-Class letters with respect to the price of First-Class cards are estimated using the Slutsky-Schultz symmetry condition and the resultant estimates are correctly introduced as stochastic restrictions rather than assumed values.

However, there remain many instances where cross-volume and cross-price elasticities based upon prior information are still installed in the fitted equations as though they are known with certainty (which they are not), notably in the equations for First-Class letters, Standard A bulk regular rate mail and Parcel Post. Witness Tolley's defense of the practice is that it is "employed out of necessity due to multicollinearity between the independent variables...." Tr. 13/6917. Postal prices and discounts are so highly correlated in witness Thress' time series samples that conventional econometrics typically fails to yield reasonable elasticities when the demand equations are specified with more than one postal price or discount.

The prescription for multicolinearity from *The Theory and Practice of Econometrics*, 2nd edition, by George G. Judge, et al. is quoted by both witnesses Thress and Tolley.

> Once detected, the best and obvious solution to [multicollinearity] is to ... incorporate more information. This additional information may be reflected in the form of new data, a priori restrictions based upon theoretical relations, prior statistical information in the form of previous statistical estimates of some of the coefficients and/or subjective information.

See USPS-T-7 at 136 and Tr. 13/6917.

It appears to the Commission that Judge, et al.'s prescription has been properly applied to deal with multicollinearity between permanent income, some of the cross-price effects, other economic variables and time. Additional information in the form of the Household Diary studies has been utilized to obtain alternate estimates of income elasticities. These alternate estimates are then introduced as stochastic restrictions on

the permanent income elasticities. Witness Thress' estimates, therefore, correctly reflect the degree of uncertainty regarding the income elasticities from the Household Diary studies.

Judge, et al.'s prescription has been interpreted quite differently with respect to the multicollinearity between postal rates and discounts. Here the Slutsky-Schultz symmetry condition or the assumption that volumes simply shift between categories is combined with selected quantitative information to produce an alternate cross-elasticity estimate. The ways these alternate estimates are calculated have been described in great detail by witness Thress in his direct testimony. *See* USPS-T-6 at 18-20, 26-29, 86 and 142-146. Many of these calculations are further described and repeated with other quantitative information in witness Thress' responses to a series of interrogatories from NAA. Tr. 13/6731-49. No one could inspect these calculations and conclude that the resulting alternate cross-elasticity estimates are anything other than roughly supportable judgments.

The same can be said for witness Thress' alternate estimates of cross-volume elasticities for Standard A bulk regular and bulk nonprofit mail in the equation for single-piece First-Class volume. Here, witness Thress uses the same calculation, with some of the same quantitative information to obtain alternate estimates that are identical to those of witness Tolley in Docket Nos. R87-1, R90-1 and R94-1. *See* USPS-T-6 at 23-26 and Tr. 13/6732-34. Here also the calculations could be performed with other data, or in alternative ways, that would yield different results. Here, again, there is nothing about the calculation of the cross-volume elasticities to support their insertion into the equation for First-Class Single-piece letters as though they are known with certainty.

Witness Tolley acknowledges that the methods used to compute some of the cross-price elasticities and the cross-volume elasticities are *ad hoc* methods of the kind criticized by the Commission in its R94-1 Opinion. Tr. 13/6912-22. In general, these *ad hoc* methods are fully explained in testimony. However, it remains the Commission's view that these estimates are essentially judgmental values that are inserted into the

demand equations at the time that the remaining coefficients are estimated econometrically. Since the coefficients apply to variables that are highly collinear with the price and economic variables in these equations, the judgments applied via the *ad hoc* methods very much affect the estimates of own-price elasticities, income elasticities, trends and other collinear variables. For example, the econometric estimate of the own-price elasticity of Workshared First-Class letters is -0.289. However, this estimate is conditional because it depends upon the accuracy of one of witness Thress' *ad hoc* estimates. The cross-price elasticity of Workshared First-Class letters with respect to the price of Standard A Regular mail has been judgmentally estimated to be 0.035. This value has been imposed on the other estimates for workshared First-Class letters as though it was known with certainty even though it is calculated using the Slutsky-Schultz relation and information from the Household Diary Studies of 1987 and 1988. If a different cross-price elasticity, say zero, were to be imposed, the econometric estimate of the own-price elasticity would change, probably substantially.

With respect to the use of *ad hoc* methods to justify imposing judgmental values for parameters, the Commission observed in its R94-1 Opinion that "direct and indirect judgments of parameter values appear far more often in the work of witness Tolley than they do in the applied work of other econometricians who have appeared before this Commission." PRC Op. R94-1, para. 2126. This observation now applies to the econometric research performed by witness Thress. So also does the Commission's opinion of the practice of relying on such judgments. "Applied econometrics is never devoid of choices and judgments by the econometrician, but the predisposition of other econometricians seems to be to rely as much as possible upon received economic theory, observed data and standard statistical methods. The Commission shares this preference." Ibid.

In previous omnibus rate proceedings one of the least satisfactory aspects of the volumes forecasts was the methodology used by witness Tolley to divide subclasses of First-Class and third-class bulk mail into worksharing categories. Since 1978, the Postal Service has instituted discounts for presorting, dropshipping and prebarcoding mail.

Worksharing occurs when a mailer qualifies for one or more of these discounts and performs the additional sorting, transporting or prebarcoding needed to receive it. The workshared mail can be processed, transported and delivered less expensively by the Postal Service because some of the normal steps can be bypassed.

In MC95-1 the Postal Service proposed and the Commission largely accepted a mail classification reform that greatly expanded the Service's proffered discounts, primarily to encourage large mailers to workshare the mail in ways that would facilitate automated processing by the Service. The volumes testimony of witness Tolley in MC95-1 included a radically new share model that was relied upon to predict shares for many worksharing categories of First-Class and Standard A Bulk Mail that previously had not even existed. This model has been refined and refit by witness Thress for this proceeding.

The Commission's opinion of the MC95-1 shares model remains high. The new model is sophisticated in its description of the economic behavior of mailers yet mathematically elegant in its reduction of the behavior to simple formulas, frequently with only three parameters for each worksharing category. The basic assumption underlying the mechanisms of the model is that eligible postal customers will take the discounts for worksharing whenever the discounts exceed their user costs. A user cost is the cost to a postal customer of performing the worksharing, such as the presorting or prebarcoding, required to qualify for a discount.

The shares model characterizes the probability distributions of user costs among postal customers as logistic distributions and determines volume shares by computing the area under the distributions for user costs that do not exceed the proposed discounts. The means of the logistic distributions for different user costs are interrelated because some average user costs are used to represent average opportunity costs for other categories. Sometimes, the mean of the user cost distributions are also linear functions of other explanatory variables such as dummy variables and trends. The logistic distribution was chosen for its mathematical tractability and resemblance to the normal distribution. The area under the logistic distribution up to the discount offered for the worksharing is the share of the eligible mail for which the worksharing discount

exceeds the user costs to mailers of performing the worksharing. This area is the share of the eligible mail for which the worksharing would be performed, the user costs incurred and the discount taken by economically efficient postal patrons.

The shares model lends itself well to standard econometric methods for nonlinear estimation and it can be manipulated algebraically to provide elementary expressions for the share of eligible mail taking the discount in each category and the average user costs for such mail. The shares model has the further advantage that it can be incorporated into the Postal Service's volume forecasting system without requiring any revisions in the subclass demand equations. The average user costs are also added to the Postal Service's fixed-weight price indices for several subclasses.

Although the shares model is clearly superior as a theoretical construct to the equations previously used by Postal Service witnesses, it must also be successfully fit to postal data to be of much practical use in forecasting worksharing volumes. For MC95-1 an attempt was made to fit the model econometrically using data for analogous preexisting worksharing categories. The econometrics failed more often than it succeeded and witness Tolley ended up applying an unusual mixture of econometric method, nonstatistical estimation and direct judgment which the Commission accepted as, perhaps, the best that could be done under the circumstances.

For this proceeding, witness Thress has respecified and refitted the shares model with dramatically improved results. Altogether 17 equations have been fit for worksharing categories of First-Class and Standard A Bulk Mail. The econometric results for several of the equations are for aggregates of more than one worksharing category, such as Automation Basic letters and flats. Shares for several other categories are determined as residuals, that is, they are derived from an equation that sums shares for alternative categories to one. Finally, the shares for all categories of worksharing First-Class letters and cards are normalized before they are used in the forecasts. Taken together, the estimated equations dispel the doubts lingering from MC95-1, that the shares model might not be capable of explaining the data.

5. Postal Service Demand Models and Estimation Methodology

Throughout their work for the Postal Service, witnesses Thress and Musgrave employ economic models of demand that depict mail volumes either: (1) as the behavior of consumers in a way that is associated with economists of the Chicago School (University of Chicago), or, (2) as a derived demand that can most directly and logically be related to economic activity in the industries for advertising and publishing, and to the more general use of mail services to deliver products. However, many of the equations used to describe derived demands are specified as though they directly described consumer behavior in the Chicago School fashion.

The basic consumption model that underlies the price elasticity estimates and forecasts for many categories of mail has a general form that is almost identical to models used by Postal Service witnesses Tolley and Musgrave in the last five postal rate cases. However, many details of the model have been considerably refined since the basic model made its first appearance in Docket No. R80-1.

The consumer demand model is of the general form:

$$\ln Q(t) - Z(t) = a + b*\ln P(t) + c*\ln R(t) + d*\ln PY(t) + e*\ln TY(t) + f1*S1 + \ldots + fn*Sn + g*X(t) + u(t)$$

Q(t) is mail volume per adult per postal accounting period during quarter "t."

Z(t) is a logistic market penetration variable ("Z-Variable") representing an autonomous logistic growth in volume.

P(t) is a deflated index of rates for the mail category. P(t) includes prices for the current quarter "t" and for the three previous quarters.

R(t) is a deflated index of rates for other competitive mail categories and, sometimes, rates of competitors to the Postal Service such as UPS. R(t) includes prices for the current quarter "t" and for the three previous quarters.

PY(t) is permanent income per household estimated as an exponentially decaying weighted average of lagged deflated disposable income expenditures per adult.

TY(t) is transitory income for which the Federal Reserve Board index of capacity utilization is most often used as a proxy.

S1-Sn are seasonal dummies for up to 17 seasonal variables. In witness Musgrave's models the seasonal dummies are replaced by a moving seasonal index S(t).

X(t) represents other economic variables, including all kinds of dummy variables and specialized trends to describe the changes occurring in worksharing user costs over time. Many of the equations include a dummy variable, GDIST, "to reflect the use of government-distributed volume beginning in 1988Q1."

u(t) is an additive random error with a zero mean and constant variance. The error may be serially correlated with lags of up to three quarters (but usually no more than two).

The parameters to be estimated are denoted "a," "b," "c," "d," "e," "f1..fn" and "g." "ln X" means the natural logarithm of the variable "X."

The consumer demand model is modified in fairly straightforward ways to directly represent derived demands rather than consumer demand. The principal modification is to the income variables. The variables for permanent income, PY(t), and transitory income, TY(t), are the elements of the demand equations that primarily reflect "Chicago School" consumption models. In the derived demand equations these variables are often dropped in favor of variables, say Y(t), that directly measure economic activity in the advertising industry or economic activities requiring delivery services.

The functional form of the Postal Service demand model is frequently used in econometric studies and in quantitative economic applications. This is because the model has the appealing property that the coefficients of the logged explanatory variables, "ln X," can be interpreted as constant elasticities. For example, the parameter "b" is the own-price elasticity of demand. It represents the ratio of the percentage change in demand to a one percent change in the rate for that class of mail. In addition, these elasticities are constant over the entire range of the function. With any other functional form, the demand elasticities would vary with price, income, and the other determinants of demand. Therefore, estimates of the coefficients "b," "c," "d," "e," etc., can be taken directly as estimates of the proportional response of demand to changes in

price, permanent income, transitory income, etc., and these proportionate responses will be the same for all forecasts of mail volume.

Elasticities for unlogged variables, such as X(t), are proportional to the variable. For example, the elasticity of volume with respect to X(t) is g*X(t).

The fact that the equation is linear in most of its parameters with an additive error means that it is amenable to the battery of linear regression techniques that are the major weapons in the arsenal of any practicing econometrician. In particular, the coefficients, except for those imbedded in the Z-Variable, can all be estimated by applying the best practical technique which is generalized least squares.

The price variables are common fixed-weight indices for each subclass and presort category of mail and for each category of special service. The price indices have been employed for the mail subclasses since Docket No. R84-1, and for special services beginning with Docket No. R94-1. The actual calculations of the price indices is performed with an array of lengthy and somewhat complicated Lotus 1-2-3 spreadsheets found in Library References. The fixed weights for the price indices used in both the econometric studies and forecasts of Postal Service witnesses are based upon PY 1996 billing determinants.

Similar economic demand models have been specified for every domestic mail subclass and special service category. In addition, separate demand equations have been formulated for Single-Piece and Workshared First-Class letters and for Stamped and Private First-Class cards.

To fit the economic demand models to data, witnesses Thress and Musgrave employ somewhat different techniques. Witness Thress' approach is to devise a generalized least squares estimator that allows him to estimate most of the parameters of the model in a single consistent step. Witness Musgrave still relies on a multi-stage method that was used by himself and witness Tolley in R94-1 and earlier. The generalized least squares estimator is a Best Linear Unbiased Estimator (BLUE) for all of the parameters in witness Thress' models which are estimated, rather than assigned values as the result of various *ad hoc* procedures. On the other hand, any desirable

properties of witness Musgrave's estimators only apply to the parameters that are estimated at the last stage. Consequently, witness Thress' econometric technique is superior to the older technique still being used by witness Musgrave.

The econometrics is generally applied with quarterly time series data sets that vary in length. For many subclasses and services, quarterly RPW statistics for volumes are available all the way back to shortly after the postal reorganization of 1970. However, not all of the early data is considered useable by witness Thress. Discounts for presorting were generally introduced for First-Class and Standard (then called third-class) bulk mail in the period between 1977 and 1983. To avoid modeling the "rapid and overwhelming" growth of workshared mail during this period, witness Thress uses only part of the available data. The samples used to fit the models for First-Class letters, but not cards, begin in 1983, Quarter 1. The samples used to fit the models for Standard Regular Bulk and Nonprofit Bulk mail begin in 1984, Quarter 1. The samples for First-Class letters were also terminated at 1996, Quarter 3, in order to eliminate any "potentially confounding influences due to classification reform."

6. Special Problems and Econometric Methods

a. Structural Changes

Structural changes of various kinds have occurred infrequently over the times spanned by the samples used by witnesses Thress and Musgrave. Structural changes can be caused by the introduction of new work sharing discounts, by major improvements in computer technology affecting the cost and use of the mail, by the arrival of competitive electronic systems such as E-mail and fax, by events such as changes in postal rules, and by changes in the way that the volumes data is reported. These changes are unexplainable by the conventional economic variables, such as the price and income variables of the Postal Service's standard model.

Witnesses Thress and Musgrave make frequent use of a standard econometric device for estimating the impact of one-time fixed shifts in the logged-form demand

equations. Such a shift can be estimated by including an appropriately defined dummy variable:

$$D(t) = 0, \text{ for all quarters before the shift, and}$$
$$1, \text{ for all quarters after the shift.}$$

The coefficient for the dummy variable represents the shift in ln Q(t) that is attributed to whatever caused the structural change.

A determined effort has been made to identify the occasions when one-time changes, particularly changes in Postal Service rules and classifications, caused shifts in postal demands. For many of these occasions the fitted demand equations include dummy variables whose estimated coefficients represent the proportional change caused by the effect represented by the associated dummy variable.

Witnesses Thress' and Musgrave's demand functions for several subclasses includes a "Z-Variable" whose function is to model structural changes that take more than a very short period of time to have an effect. Mathematically, the "Z-Variable" is a function of time (t) that usually describes the adoption of a new product or service. The curve is nonlinear in three parameters:

$$Z(t) = a / [1 + b * \exp(-c * t)]$$

where the parameter "a" is the ceiling to the value of the constant term, the parameter "b" is the ratio of the number of future ultimate adopters to the number of adopters in the initial period, and the parameter "c" is the rate of adoption.

The parameters of the "Z-Variable" cannot be estimated along with the other coefficients of the demand function. Instead, an iterative process is followed to find the values of the parameters that minimize the sum of the squared residuals. The parameters of the "Z-Variable" are established prior to the application of methods to estimate the other parameters of the model. Quarterly values of the "Z-Variable" are computed for the sample and subtracted from the volume figures before the remaining steps of the estimation procedure are performed.

b. Near Multicollinearity Among the Current and Lagged Values of the Price Variables P(t) and R(t)

The price variables P(t) and R(t) are actually configurations of four current and lagged deflated indices. The current and lagged values are so highly correlated in the sample that standard estimation methods would yield an implausible pattern of coefficient estimates with poor "t" values.

Shiller Priors are one of several methods for dealing with the problem. Shiller Priors are used to impose a rational form on the pattern of coefficients for the current and lagged price terms. The method requires a predetermined parameter for each price variable which specifies the force applied by the estimator to make the coefficient estimates conform to a prior polynomial pattern. Postal Service witnesses make estimates using different values for the Shiller parameter for different equations and for different price variables within the same equation. An iterative process with a predetermined termination rule is used to select the values of the Shiller parameters. The intent of the process is to select the estimates that require the least force to exhibit a reasonable pattern.

c. Permanent Income, PY(t), Is Not Directly Measurable and Is Collinear With Other Variables

A standard assumption of generalized least-squares and most other econometric equation-fitting techniques is that the measurements of the explanatory variables in the sample are error-free. When this condition is violated it is well-known that the resulting parameter estimates will be biased.

The time series for permanent income is itself estimated in a manner described in witness Thress' Workpaper 1. Since the computed series for permanent income has been estimated from other data, it contains an unavoidable error. So, if the series is used directly in a time-series regression, the resulting coefficient for permanent income will be biased. The estimated coefficients of the other variables will also be biased but, typically, to a much smaller extent.

However, the estimated series for permanent income can still be viewed as a predictor in its own right, so the biases are not necessarily a concern in an equation used just for forecasting.[1]

The bias is also of no concern for witness Thress when a measurable variable, such as real per capita disposable income or personal consumption expenditures, is substituted for permanent income as is done in some of his demand equations. However, in most instances witness Thress has chosen to rely on coefficients derived from fits to cross-section data from the 1994 Household Diary Study. The estimation procedure, including a correction factor for the errors-in-variables bias, is described in witness Thress' Workpaper 2. The cross-section elasticity estimates, along with estimates of their variability, are introduced as stochastic constraints in witness Thress' generalized least squares estimator. Thus the permanent income elasticities that eventually emerge from the estimation process correctly balance both the information from the Household Diary Study and the time series.

Witness Thress' research disclosed that permanent income elasticities could not be reliably estimated from the time series alone. See Table III-1 in USPS-T-7 at 138.

d. Serial Correlation of the Equation Errors

When initially fit, many of the equations of the economic demand model exhibit serially correlated residuals. That is, the residuals are correlated with their lagged values over several previous quarters in a way that suggests an autoregressive process with up to three lags of the form:

$$u(t) = a * u(t-1) + b * u(t-2) + c * u(t-3) + e(t)$$

where u(t) is the equation error for quarter t and e(t) is a serially uncorrelated error.

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[1] Witness Musgrave includes two permanent-income-type variables in the equations for Priority and Express Mail, estimates their elasticities along with the other parameters of the models and ignores the bias.

The uncorrected least squares estimator is efficient and most of the goodness-of-fit statistics unbiased only if the equation error u(t) is itself serially uncorrelated, i.e., a=b=c=0. Many of witness Thress' initial fits exhibited poor Durbin-Watson statistics indicating that this assumption was untenable at least with respect to the first-order coefficient "a." (Neither of witness Musgrave's equations exhibited significant first-order serial correlation of the residuals.)

Serial correlation is a common problem with economic models fit to samples consisting of quarterly time series. There are a number of possible causes. Among these are persistence over time of the sources of errors, mistimed measurements, misspecification of the economic model and the incorrect or inappropriate use of distributed lags.

Witness Thress deals with the serial correlation problem in his models by applying a well-known method due to Cochrane and Orcutt. The estimated coefficients, "a," "b" and "c," of the autoregressive processes for his demand equations are shown in the tables of estimates in his direct testimony. The autocorrelation coefficients are also incorporated properly into the generalized least squares estimator. This increases the efficiency of the estimator, and yields unbiased estimates of the "t-values" and other measures of the properties of the estimates.

Typically, witness Thress' demand equations require fewer and less serious corrections for serial correlation of the equation errors than comparable demand equations fit by witness Tolley for Docket No. R94-1. This improvement is probably attributable to the improvements witness Thress has made in the selection of variables for many of the demand equations.

e. Seasonal Patterns in Volume

Witnesses Thress and Musgrave use very different methods for treating seasonal patterns in volume. Witness Musgrave uses a seasonal index of a kind that has been severely criticized by the Commission in opinions for past proceedings.

The Postal Service's models will usually leave residuals with a clearly seasonal pattern. This occurs because such seasonals are often an oversimplification. In fact, many of the seasonal components of mail volume have changed over time. For example, people today tend to send out fewer Christmas cards than they used to. Of even more significance is the fact that since reorganization, the Postal Service has operated on an annual calendar that is always one or two days too short. Consequently, postal quarters have been shifting back at the rate of 5 days every 4 years.

Witness Musgrave deals with this problem by seasonally adjusting the residuals from a fixed-seasonal regression and then adding the seasonally adjusted series and the fixed-seasonals together to create a seasonal index S(t). The model is then refit with the seasonal index replacing the fixed seasonals. The seasonal adjustment procedure is the standard X-11 process developed by the U.S. Department of Commerce. The X-11 process is widely relied upon to seasonally adjust U.S. economic data.

The difficulty with witness Musgrave's method is that the computed seasonal index, S(t) is bound to include some components of current and past errors. A basic assumption of least squares and most other regression techniques is that the equation errors are uncorrelated with the explanatory variables in the equation. Witness Musgrave's models violate this assumption because the X-11 process seasonally adjusts the residuals which largely consist of the equation errors.

Witness Tress has devised an alternative approach that has none of the defects of the seasonal index. His approach is to divide the Gregorian calendar into 17 "seasons" of differing length. Almost half of these seasons include days in the month of December. The seasonal variables S1, S2,..,Sn are defined as the proportion of business days within the quarter that fall within the season. For example, the first "season" is the entire month of September. So, S1 is the proportion of a quarter's business days that occur in the month of September.

Since the seasonals always sum to 4, only 16 of them can be included in an equation at one time. However, 16 variables is still a lot of variables to add to a regression equation being fit to a limited sample. To conserve degrees of freedom, witness Thress

combines seasonals that prove to have coefficients that are similar in sign and magnitude. For instance, combining in the equation for First-Class Single-Piece letters leaves a reduced set of 11 seasonals in the equation as it appears in witness Thress' direct testimony.

f. Near Multicollinearity Between Different Price Variables

The use of two or more highly correlated variables in a standard demand model will often yield estimates of coefficients with signs or magnitudes that conflict with economic theory or reasonable expectations. When this occurs it is often because the information in the limited sample is just not sufficient to permit the econometrics to reliably separate the effects that are individually due to the correlated variables.

This problem arises most often when more than one price variable is included in the demand models. Deflated postal prices are highly correlated with each other because they are all deflated with a common general price index and because nominal postal rates usually change at the same time following an omnibus rate case and in roughly similar proportions. Prices other than postal prices also tend to be highly correlated. This happens because all prices tend to track the general rate of inflation in the economy.

The most common treatment for near multicollinearity between explanatory variables in a linear regression is to remove enough variables from the model to leave a subset with coefficients that can be reliably estimated. Another solution that is not always available is to increase the size of the sample. Finally, it may be possible to apply other information in the form of a priori restrictions or stochastic constraints. Witness Thress generally addresses the problem of improper signs or magnitudes by constraining the offending coefficient to an *ad hoc* stochastic or nonstochastic estimate based on judgment, assumptions and nonsample information.

Microeconomic theory describes a symmetrical relationship for individual consumers between the cross-price elasticities of demand and a single consumer's expenditures on two substitutable goods. The relationship is known as the Slutsky-Schultz symmetry

condition. This microeconomic relationship can be regarded as a market–wide restriction if one is prepared to assume that it will hold in the aggregate and over time for any two goods, such as postal mail categories, that are substitutes for one another.

Application of the Slutsky-Schultz symmetry condition makes it possible to derive two different estimates of the cross price elasticities that appear in several of the economic demand equations. Witness Thress has applied the Slutsky-Schultz symmetry condition to avoid estimating cross price elasticities in several of the equations where they appear. Given the form of the Postal Service's demand models, the Slutsky-Schultz symmetry condition implies that the relative revenues of the two subclasses involved in the relationship have not changed over time. This is usually not an observed characteristic of the revenue data.

One of the cross price elasticities from the Slutsky-Schultz symmetry conditions is typically computed using the revenue values for a recent year and the assumption that the other of the two econometric estimates of the cross elasticities is "correct." Clearly, this is a procedure that will yield different results depending upon the period chosen for the revenue values and the selection of the estimated cross-price elasticity regarded as correct. Moreover, even if these judgments are all accepted, the computed elasticity is still stochastic because it depends on a stochastic estimate of another cross-price elasticity. On one occasion the Slutsky-Schultz arithmetic is embedded within a larger system that requires even more assumptions. To derive an estimate of the cross price elasticity of Standard Bulk regular mail with respect to the price of First-Class letters, witness Thress assumes that the own-price elasticity of advertising-only letters is –0.5, that advertising mail shifts between presort categories, and that the shifts will not exceed postage costs. All of these assumptions are, at best, uncertain.

Values for cross-price elasticities computed in this fashion are introduced into the estimated equations in two different ways. Sometimes the computed cross-price elasticities are introduced as stochastic constraints in a way that reflects some of the uncertainty surrounding the estimate. More often, the computed cross-price elasticity is represented as a constraint that is "imposed with certainty" within the generalized least

squares estimator. The Commission views the latter case as no different from simply imposing a judgmental value.

The elasticity of Single-Piece First-Class letters with respect to the Worksharing First-Class letters discount is also a judgmental estimate that is derived in a manner that closely resembles witness Thress' use of the Slutsky-Schultz condition. Here, the assumption is that the volume that leaves Single-Piece letters in response to an increase in the discount is equal to the volume that enters Worksharing letters. The obvious problem with this assumption is that it ignores volumes that enter Worksharing letters from other subclasses.

Under this assumption the ratio of the discount elasticities in the equations for Single-Piece and First-Class letters is shown to be equal to the negative inverse of the ratio of the volumes for these categories. Again, if we are prepared to assume that one of the two estimated elasticities is "correct" and that the volume ratio is constant over time, then we can exploit the relationship to obtain an *ad hoc* estimate of the other discount elasticity.

The procedure has all of the same defects as the use of the Slutsky-Schultz condition. Which of the estimated elasticities is to be chosen as the "correct" one? Can the volume ratio be constant over time given the form of the demand functions? Is it in fact approximately constant over time? Finally, since the estimate cannot possibly be more than a rough guess, why is it being "imposed with certainty" within the generalized least squares estimator?

g. Cross-Volume Elasticities in First-Class Single Piece Letters

Nonprice variables appearing in the demand equations may also be highly correlated. For example, witness Thress' equation for First-Class Single Piece letters includes Standard bulk regular volume lagged one quarter and Standard bulk nonprofit volume unlagged. These two categories of Standard mail are similar, have related prices and discounts and tend to grow together. In addition, the price of Standard bulk

regular mail also is included as an explanatory variable in the equations for First-Class letters and would be expected to be correlated with Standard bulk mail volumes.

The two cross-volume elasticities in the equation for First-Class letters are nonstochastic nonsample estimates derived from an *ad hoc* calculation that resembles in purpose the calculation of many of the cross-price elasticities. As there, a relationship is assumed from which the desired cross-volume elasticities can be calculated. This relationship is:

Elasticity = (Response Rate) * (Total Standard bulk mail volume)
/ (Total First-Class letters volume)

"Response rates" for Standard bulk regular and Standard bulk nonprofit mail are taken from a calculation that employs data from the 1987 and 1988 Household Diary studies, even though more recent information is available. After rounding and making a few more assumptions regarding nonprofit mail, witness Thress ends up with cross-volume elasticities of 0.030 for Standard bulk regular mail and 0.010 for Standard bulk nonprofit. These values are then "scaled up proportionately" to 0.040 and 0.013 and installed in the demand equation for First-Class Single-Piece mail.

Before being scaled, these *ad hoc* estimates are exactly the same as the values used by witness Tolley in Docket Nos. R94-1, R90-1 and R87-1. They are simply judgmental values that have been imposed in the past by witness Tolley, and, now, by witness Thress. The first use of the assumed values of 0.030 and 0.010 in a First-Class letters equation actually predates the 1987 Household Diary Study.

7. The Postal Service Share and User Cost Model

The methodology employed by Postal Service witness Thress to forecast shares and user costs for worksharing mail was first introduced in Docket No. MC95-1. In prior rate cases such as R94-1, witness Tolley relied upon econometric share equations to forecast volumes of First-Class and third-class bulk mail in several presort categories.

However, these previous share equations bear little resemblance to the share equations for First-Class and Standard mail that have been developed to replace them.

The Postal Service's model now depends upon an explicit assumed form for the probability distribution of user costs among postal customers who engage (or might even consider engaging) in worksharing to qualify for one or another of the many discounts offered by the Postal Service for worksharing. Discounts for presortation, prepositioning, prebarcoding and/or other forms of worksharing have been a characteristic of postal rates since the late 1970s and are even more characteristic of rates following the MC95-1 classification reform.

Worksharing is not generally costless to mailers. The cost to a mailer of presorting, prebarcoding, etc., is the "user cost" of performing the worksharing. The share forecasting methodology adopted by witness Thress assumes that user costs follow a logistic probability distribution for each specific category of worksharing.

The mathematical formula for the logistic distribution of a standardized random variable, x,[2] is

$$f(x) = \frac{\exp(-x)}{[1 + \exp(-x)]^2}$$

The logistic distribution is a symmetrical distribution that very much resembles the normal distribution in its general form. However, the logistic distribution has several mathematical properties that make it much more convenient to apply within the Postal Service's volume forecasting system. These properties are, first, that the cumulative logistic distribution has an elementary form, specifically,

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[2] A random variable X with mean μ and standard deviation σ can be transformed into a standard variable x by expressing it in terms of deviations from its mean, each deviation being divided by σ. Symbolically, $x = \frac{X - \mu}{\sigma}$.

$$F(y) = \int_{-\infty}^{y} f(x)dx = \frac{1}{1 + \exp(-y)}$$

and, second, that the expected value of the truncated logistic distribution is also quite simple in form.

$$E[x|x \leq y] = y + \frac{\ln[1 - F(y)]}{F(y)}$$

The expected value of the truncated logistic distribution is the mean of x for that portion of the logistic distribution that lies below y.

The Postal Service's model assumes that the user cost, u, that attaches to any particular kind of worksharing obeys a nonstandardized logistic distribution with mean, μ, and standard distribution, σ. The formulas for the nonstandardized logistic distribution are only slightly more complicated than the formulas for the standardized version.

$$f(u) = \frac{\exp(-(u - \mu)/\sigma)}{\sigma[1 + \exp(-(u - \mu)/\sigma)]^2}$$

Mailers perform the worksharing when their user costs are less than the discount, d, and they forego the worksharing and pay the undiscounted rate when their user costs exceed the discount. Therefore, the proportion of potential mailers who will perform the worksharing for a given discount, d, is obtained by evaluating the cumulative nonstandardized logistic distribution at d.

$$F(d) = \frac{1}{1 + \exp(-(d - \mu)/\sigma)}$$

The expected value of the truncated nonstandardized logistic distribution yields the average user cost of mailers who perform the worksharing. The average user cost of mailers taking the discount will always be less than the amount of the discount.

Although these three formulas for the nonstandardized logistic distribution describe the essential mathematics of the Postal Service's share model, several modifications and additions are essential before the model can be applied to project shares and volumes for any category of mail.

First, the logistic distribution is symmetric. This means that some part of the lower tail of the distribution will always apply to user costs that are negative. But negative user costs make little economic sense. So the tail of the logistic distribution corresponding to negative user costs must somehow be excluded.

Second, each user cost distribution applies to all of the mail that might conceivably be eligible for a specific worksharing discount. However, not all of the mail in a related group of categories, such as a subclass, may be a reasonable candidate for every kind of worksharing. The logistic distributions themselves may apply to only a proportion within an aggregate of mail.

Third, the logistic distributions may not be fixed over time. It is, in fact, plausible to expect the distributions to shift gradually as mailers adapt to new technologies, and, to shift more quickly when mailers confront changes in postal regulations and classifications. Therefore, the means of the logistic distributions should not be regarded as entirely fixed parameters.

Fourth, the logistic distributions cannot all be completely independent of discounts and user costs in competing discount categories. For purposes of applying the model, the Postal Service has defined worksharing categories that are mutually exclusive and has included nondiscounted categories as residuals in their model. Since worksharing qualifies a piece of mail for no more than one discount, mailers will select the most advantageous worksharing category based upon the differential between the proffered discount and their user costs. Furthermore, all of the worksharing shares within a group must sum to one, so a change in the worksharing share of one category must affect the share of at least one other category in the same group.

The Postal Service's shares model deals with the possibility of negative user costs by censoring the lower tail of the nonstandardized logistic distribution. The distributions

are altered by collecting the areas of the lower tails and assigning this area as the probability of a user cost equal to zero. The distributions are unchanged for user costs above zero. Mathematically, the censored distributions set f(u)=0 for all u<0, set f(0)=F(0),and leave the distribution unchanged for u>0. The censoring has no effect upon the cumulative probability density, F(d), for discounts that are non-negative, i.e., for d>=0. However, the censoring alters the formula for the average user cost which becomes:

$$E[u \mid u \le d] = d + \frac{\sigma \ln[1 - F(d)]}{F(d)} - \frac{\sigma \ln[1 - F(0)]}{F(d)}$$

The effect of the censoring on average user cost is small if the censored tail of the nonstandardized distribution is small. As F(0) approaches zero, the additional term in the formula for average user cost approaches zero. The censored tail is small for nonstandardized distributions in which the standard deviation, σ, is small relative to the mean, μ. In fact, this is a characteristic of many of the user cost distributions that are actually employed to produce the Postal Service's forecasts. Unfortunately, the exceptions are often fairly large categories of mail, for example, First-Class Presort Nonautomation Letters has a mean of 3.77 cents and a standard deviation of 3.17 cents. See USPS-T-7, Table IV-1 at 221. For this category the uncensored distribution unreasonably implies that a substantial volume of First-Class Presort Nonautomation letters can be presorted at a negative cost. Censoring the distribution is equivalent to assuming that this part of the volume of First-Class Nonautomation letters can be presorted at no user cost. However, there is no independent body of evidence on the record in this proceeding or in any prior rate proceeding to support a finding that such a substantial part of First-Class Nonautomated letters can be presorted at no cost to mailers.

The possibility that all of the mail in an aggregate group may not be a candidate for a particular kind of worksharing is treated by introducing an additional parameter. The parameter, α, is defined as the maximum proportion of aggregate mail which would ever

be eligible for a worksharing discount even if it were very high. It is the limiting proportion of the aggregate mail for which the worksharing could ever be a reasonable option. The equation for the share, s, of mail in a worksharing category is derived by multiplying the cumulative probability density at the discount, F(d), by the maximum proportion, α.

$$s = \frac{\alpha}{1 + \exp(-(d - \mu)/\sigma)}$$

This equation underlies both the estimation and share forecasting performed by witness Thress. When applied to current worksharing categories, the equation's parameters may be fit by nonlinear least squares to a time series of quarterly observations of worksharing shares. In forecasting with the equation the parameter α is solved out using values for the last two quarters of the base year. The share equation, in the form used for forecasting positions the base values as follows:

$$s = s_{base}\frac{1 + \exp(-(d_{base} - \mu_{base})/\sigma)}{1 + \exp(-(d - \mu)/\sigma)}$$

Both the discount, d, and the mean, μ, may differ over time from the values prevailing in the base year, however, the standard deviation, σ, is assumed not to change over time.

In the process of fitting the share equation it is not essential that the mean of the logistic distribution, μ, be treated as fixed. Most often, witness Thress has attempted to fit the share equations in a form that permits the mean to shift over time, t, and in response to other variables, Z_j, that might be expected to have an influence on user costs. This is done by embedding the following linear expression for the mean in the share equation and then using nonlinear least squares to estimate α, σ and the parameters of the linear function, a_i, instead of the mean.

$$\mu = a_0 + a_1 t + \sum a_j z_j$$

Nonlinear least squares is an appropriate method for obtaining econometric estimates of the parameters of the share equations for existing worksharing categories. Share equations have been fit for seventeen worksharing categories. Some of these categories are actually aggregates of several related worksharing categories. In these cases the estimated parameters are assumed to apply to all of the smaller categories making up the aggregate. Many of these equations are fit with the parameter α constrained to equal one. Most have also been fit with opportunity costs, denoted oc_i, included in the mean as follows:

$$\mu = a_0 + a_1 t + \sum a_j z_j + \sum oc_k$$

Opportunity costs are defined as the foregone benefit of using one worksharing category instead of another. For simplicity, let E_k denote the average user cost of all mailers who use category k. E_k is the expected value of user cost $E[u_k|u_k<=d_k]$ from the censored and truncated nonstandardized logistic distribution for category k. In the Postal Service model the benefit of not using category k is equal to the difference (d_k-E_k) multiplied by the share, s_k. The opportunity cost, oc_k, of not using category k is:

$$oc_k = (d_k - E_k)s_k$$

This opportunity cost is typically included in the means of some of the categories which might have benefited by doing the worksharing to receive the discount for another category k. For example, the mean of the user cost distribution for Nonautomation First-Class Presort Letters includes opportunity costs for the Automation 3/5-digit letters and flats and for carrier-route First-Class letters, flats and IPPs. Opportunity costs are included in (or excluded from) the share equations according to the econometric research and judgements of witness Thress.

Portions of several categories without worksharing discounts are included in the Postal Service model as residuals. These categories are Standard regular and nonprofit basic nonautomation letters and nonletters. There are no share equations for these four

categories, instead, mail in these categories is partly determined as a residual from the volume changes that are predicted in discounted categories. For example, if the share equations for the discounted categories of Standard regular letters predict a net increase in worksharing mail, this increase is deducted from the forecast of Standard regular basic nonautomation letters.

Share equations exist for all of the worksharing categories of First-Class workshared letters and private workshared cards. However, the predicted shares will not necessarily sum to one. Consequently, the predicted shares for these categories are normalized within the shares model.

Opportunity costs, residuals and normalization are the mechanisms that link together the volume forecasts for alternative worksharing categories in the Postal Service's model. The effects of a change in the discount for a particular category, say Automation 3-Digit letters, are carried to other categories such as Automation 5-Digit letters and Automation Basic letters through the induced changes in opportunity costs, residuals and normalization. Therefore, these components of the model are critical for accurately forecasting volumes at the level of worksharing categories.

8. Postal Service Forecasting Methodology

Mail volumes during the test year were projected for all categories using a forecasting methodology detailed in witness Tolley's Workpaper 2. The workpaper includes illustrations of the methodology for First-Class letters, Periodicals regular and Standard bulk regular mail. A general summary and discussion of the forecasting methodology can be found in the Technical Appendix to witness Tolley's direct testimony.

The basic forecasting methodology for any mail class is to adjust the volume observed during a base year to obtain projections of volumes during each quarter of the test year. The base year for the Postal Service's forecasts is composed of 1996 Q3, 1996 Q4, 1997 Q1 and 1997 Q2. The base year comprises the last four quarters of

volume data that were available to Postal Service witnesses at the time they made their projections. The test year is GFY 1998. Revised Commission rules also required the Postal Service to submit forecasts for the last two postal quarters of 1997 and GFY 1999. The forecasting methodology involves using the elasticities from the estimated demand equations, worksharing shares from the shares model and, sometimes, auxiliary estimates of net trends to project volumes by postal quarters from the end of the base year to the last postal quarter in GFY 1999. Minor adjustments are made to account for the gap between the end of Postal Quarter 4 and the start of the GFY and then the quarterly projections are summed to yield the volume forecasts in Tables 1 through 4 of Exhibit USPS-6A attached to the direct testimony of witness Tolley.

The formula that is used to adjust base year volumes is:

$$VOL = BASEVOL * QM * RM * NRM * PM * SM * TM$$

VOL is volume in millions of pieces projected for a mail category in a quarter of the test year.

BASEVOL is the base year volume for the mail category computed as the sum of volumes for the four postal quarters of the base year.

QM is a quarter multiplier that converts annual volume into quarterly volume in proportion to how many of the 13 accounting periods in a year are included in the quarter.

RM is a rate effect multiplier measuring the impact on volume of changes in the deflated current and lagged prices of postal services. RM is obtained by multiplying together terms of the form $[P(t)/P(0)]^b$ where P(t) is a deflated price in the projection quarter, P(0) is an average deflated price during the base year, and b is the estimated own or cross price elasticity of demand.

NRM is a nonrate effect multiplier that combines population, permanent income, transitory income and other specific effects by multiplying together terms of the form $[Z(t)/Z(0)]^c$ where Z(t) is the expected value of a nonrate variable in the projection quarter, Z(0) is the variable's average value during the base year and c is the elasticity of volume with respect to the nonrate variable. For adult population c=1 is assumed.

PM is a multiplier for worksharing categories equal to the projected share computed from the shares model.

SM is a seasonal multiplier derived from the estimated coefficients of the seasonal variables and the estimated intercept of the demand equation.

TM is a net trend multiplier calculated according to the equation $TM = (1 + r)^{[t/4]}$. The parameter "r" is annual net trend and t is the number of quarters measured from the midpoint of the base year to the midpoint of the projection quarter.

VA is a volume adjustment factor used to account for demand shifts that have occurred (or are expected to occur) as the result of events since the end of the sample period.

"Before-rates," "After-rates" and other rates projections are made with the formula by employing the appropriate postal rates and discounts in the computation of the rate multiplier (RM) and in the computation of the presort multiplier (PM).

In practice the Postal Service volume forecasts are computed using a series of Lotus 1-2-3 worksheets which comprise an important component of the material required by the Commission's rules upon the filing of a general rate case. The worksheets, or an equivalent system for computing forecasts according to the Postal Service model, are necessary for the Commission's work. The worksheets enable the Commission, if necessary, to modify the forecasting system developed by Postal Service witnesses and then to apply it to evaluate the volumes, revenues and costs that may be expected following the adoption of rates and fees that differ from those proposed by the Postal Service.

For the most part the forecasting methodology follows the econometrics. That is to say, the multipliers are derived in the appropriate way from witness Thress' and Musgrave's estimated elasticities. However, the net trend multiplier, TM, and the volume adjustment factor, VA, are not always derived from either the demand equations or the shares model. The volume adjustments, VA, are occasionally made to deal with changes between the base year and the test year that are expected to occur for reasons such as a proposed change in postal rules or a reclassification. Estimating the effect of

such proposed changes is generally beyond the scope of the econometrics. However, some allowance for such changes must be made in the forecasts.

The net trend multiplier, NT, is intended to represent growth in mail volume between the base year and the test year not already explained by the economic variables and other terms included in the demand equations. Witness Tolley's discussions of his forecasts suggest that there may be many possible causes of unexplained short-term trends in mail volumes, that the interactions between the causes and postal volumes are complex and poorly understood, and that the explanations of the trends can differ considerably from mail class to mail class.

Witness Tolley (but not witness Musgrave) believes that it is still sometimes necessary to incorporate a term for recent unexplained trends in the volume forecasts. Therefore, he augments the model forecasts for some classes of mail with a net trend intended to represent a continuation of recent volume growth that cannot be attributed to movements in population, postal rates, income and other economic variables. The source of the net trends employed by witness Tolley is a forecast error analysis program described in the appendix to his direct testimony. The estimate that is most often selected is described as a "five-year mechanical net trend." It is the average annual trend unexplained by the demand model over the last five years of the sample.

Witness Tolley uses his personal judgment to decide which mail categories will have net trends included in their forecasts and which will not. Thus, the Postal Service's volume forecasts should be viewed as dependent upon both the econometric studies performed by Postal Service witnesses Thress and Musgrave, and upon the personal judgments of witness Tolley with respect to the net trends.

The Commission regards witness Tolley's error analysis program as an *ad hoc* method for estimating net trends being used in place of accepted econometric methodology. The accepted econometric methodology is to define a variable to represent a recent trend, include the variable in the specification of the demand equation, and estimate a coefficient for the variable along with the other parameters of the demand equation. The accepted econometric methodology has several advantages

over witness Tolley's *ad hoc* procedure. First, if a recent trend is really important then omitting a net trend variable from the demand models leaves estimates with a missing variable bias. Second, the statistical properties of all of the estimated parameters of the demand equation will be improved when an explanatory variable is added to capture an important recent net trend. Third, the estimated trend coefficient has all of the desirable properties of a generalized least squares estimate, whereas the statistical properties of witness Tolley's *ad hoc* estimates are unknown and may be undesirable. Fourth, the estimated net trend coefficient will have an associated "t-value" describing the accuracy of the estimate, whereas the accuracy of witness Tolley's net trends is a mystery. Fifth, the econometric methodology provides the appropriate setting for exploring refinements to the definition of the net trend variable itself. For example, witness Tolley's choice of a four or five year period for calculating net trends in his forecast error analysis is arbitrary and could easily be refined by witness Thress in the econometric research.

The table below compares the Postal Service's estimated test year after rates volumes with the Commission's estimated volumes.

Table H-3
Comparison of Estimated Test Year Volumes[1]

(Pieces in Thousands)

Mail Class	USPS Est. TYAR Volume	USPS Est. TYAR Volume (Revised)	PRC Est. TYAR Volume
First-Class Mail:			
Single-Piece Letters	54,413,387	54,398,359	53,878,992
Presort Letters	4,855,407	4,856,601	5,086,358
Automation Letters	36,177,775	36,190,159	36,545,126
Total Presort Letters	41,033,182	41,046,760	41,631,484
Total Letters	95,446,568	95,445,120	95,510,476
Stamped Cards	583,005	582,936	590,659
Single-Piece Post Cards	2,476,656	2,476,015	2,546,942
Total Single-Piece Cards	3,059,660	3,058,951	3,137,600
Presort Post Cards	667,024	666,889	657,862
Automation Post Cards	1,796,361	1,796,201	1,896,479
Total Presort Cards	2,463,385	2,463,091	2,554,341
Total Cards	5,523,046	5,522,041	5,691,941
Total First Class	100,969,614	100,967,161	101,202,417
Priority Mail	1,087,829	1,095,530	1,110,446
Express Mail	63,410	63,857	59,913
Mailgrams	4,757	4,761	4,761
Periodicals:			
Within County	901,870	901,905	905,418
Regular Rate	7,147,574	7,149,900	7,145,748
Nonprofit	2,161,077	2,161,971	2,147,001
Classroom	47,452	47,493	45,350
Total Periodicals	10,257,973	10,261,269	10,243,518
Standard Mail (A):			
Single Piece	161,574	162,295	163,424
Regular - Presort	9,184,917	9,183,470	9,826,598
- Automation	28,442,638	28,442,599	28,031,687
Total Regular	37,627,554	37,626,068	37,858,285
Regular ECR - Presort	26,626,519	26,622,482	26,686,684
- Automation	2,059,662	2,059,272	2,072,340
Total Regular ECR	28,686,181	28,681,754	28,759,024
Total Bulk Rate Regular	66,313,735	66,307,822	66,617,309
Nonprofit - Presort	3,658,517	3,662,109	3,585,926
- Automation	6,892,451	6,889,150	6,964,304
Total Nonprofit	10,550,968	10,551,259	10,550,230
Nonprofit ECR - Presort	2,216,629	2,216,543	2,230,454
- Automation	354,654	354,662	360,597
Total Nonprofit ECR	2,571,283	2,571,205	2,591,051
Total Bulk Rate Nonprofit	13,122,251	13,122,463	13,141,281
Total Standard Mail (A)	79,597,559	79,592,580	79,922,014
Standard Mail (B):			
Parcel Post	231,879	231,496	214,455
Bound Printed Matter	561,718	561,999	562,041
Special Rate	200,511	200,734	206,671
Library Rate	28,709	28,716	29,836
Total Standard Mail (B)	1,022,817	1,022,945	1,013,004
USPS Penalty Mail	297,820	298,093	298,093
Free-for-the-Blind Mail	56,390	56,427	56,427
TOTAL DOMESTIC MAIL	193,358,170	193,362,623	193,910,592
International Mail	1,006,682	1,006,682	1,006,682
TOTAL ALL MAIL	194,364,852	194,369,305	194,917,273
Special Services:			
Registered Mail	14,288	14,288	15,178
Insured Mail	30,600	30,557	29,786
Certified Mail	293,118	293,299	300,107
Collect-On-Delivery	3,886	3,887	3,887
Money Orders	236,570	236,686	241,071
Total Special Services	578,463	578,717	590,029

[1] The volume forecasts in this table have not been adjusted for volume changes due to recommended classification changes.

VOLUME, REVENUE & COST EFFECTS OF INCREASING FIRST-CLASS MAXIMUM OUNCE LIMIT

This Appendix presents a series of tables designed to document the method employed by the Commission for estimating the volume of Priority Mail expected to migrate to First-Class letters in the test year because of the recommended increase in the maximum weight of First-Class letters from 11 to 13 ounces. The tables also calculate the revenue loss expected to be caused by the recommended new classification change and the total cost of migrating Priority Mail pieces.

The method used by the Commission to estimate the migrating volume was developed by witness John Haldi and was presented in Appendix A of his Direct Testimony (NDMS-T-2) on behalf of Nashua Photo Inc., District Photo Inc., Mystic Color Lab, and Seattle Filmworks, Inc. Tr. 20/10375-80. Later, in his response to P.O. Information Request No. 17, Dr. Haldi provided a detailed description of his method and supplied the formulas used in this Appendix. Tr. 32/17315-22.

The source of all Tables is spreadsheet ALL-R97A.Wk4, page VADJ in PRC LR-18.

Table 1
Inputs Needed to Calculate the Volume Expected to Migrate from Priority to First-Class Single Piece and to Estimate the Revenue Impact Due to Increase in the Maximum Weight for First-Class Letters

Current Rates:	
First-Class First Ounce Letter Rate ($)	0.32
First-Class Add. Ounce Letter Rate ($)	0.23
Two Pound Priority Mail Rate ($)	3.00
Recommented Rates:	
First-Class First Ounce Letter Rate ($)	**0.33**
First-Class Add. Ounce Letter Rate ($)	**0.22**
Two Pound Priority Mail Rate ($)	**3.20**
Total Priority Mail Volume for:	
TYBR (Pieces in Thousands)	**1,131,663**
Unadjusted TYAR (Pieces in Thousands)	**1,110,446**

Note: The method employed by the Commission to calculate the volume migration due to increase in the maximum weight of First-Class letters has been proposed by Dr. John Haldi and is explained in his Response to POIR No. 17 (Tr. 32/17315-22).

Table 2
FY 1996
Total First-Class Single Pieces and Priority Mail
Pieces Weighing Less than Two Pounds
Distributed to One-Ounce Increments
(In Thousands)

Weight Increment (Ounces)	First-Class Single Piece 1/	Priority Mail 2/	Total
	(1)	(2)	(3)
1	**47,579,108**	**4,512**	**47,583,620**
2	**3,256,749**	**22,607**	**3,279,356**
3	**1,233,474**	**18,210**	**1,251,684**
4	**664,350**	**12,139**	**676,489**
5	**433,305**	**10,280**	**443,585**
6	**296,728**	**9,607**	**306,335**
7	**216,075**	**8,688**	**224,763**
8	**167,416**	**9,592**	**177,008**
9	**132,095**	**10,741**	**142,836**
10	**97,151**	**12,192**	**109,343**
11	**74,310**	**17,541**	**91,851**
12		71,844	71,844
13		62,797	62,797
14		54,837	54,837
15		47,777	47,777
16		41,582	41,582
17		36,994	36,994
18		34,603	34,603
19		30,351	30,351
20		28,256	28,256
21		25,231	25,231
22		24,680	24,680
23		21,602	21,602
24		20,012	20,012
25		17,961	17,961
26		16,297	16,297
27		14,765	14,765
28		14,579	14,579
29		13,487	13,487
30		12,938	12,938
31		11,989	11,989
32		11,069	11,069
Two-Pound Total	**54,150,761**	**749,758**	**54,900,519**
All Other Volume	**(2)**	**187,514**	**187,512**
FY 1996 Volume	**54,150,759**	**937,273**	**55,088,032**

1/ Response of witness Sharkey to NDMS/USPS-T33-7 (Tr. 4/1953).
2/ Attachment to USPS response to NDMS/USPS-32-47 (Tr. 19B/8972).

Table 3
TYBR and TYAR
Two Pound Priority Mail Pieces
Distributed to One-Ounce Increments
(In Thousands)

Weight Increment (Ounces)	TYBR (1)	TYAR (2)	Percent Change (3)
1	**5,447**	**5,345**	
2	**27,296**	**26,784**	
3	**21,986**	**21,574**	
4	**14,657**	**14,382**	
5	**12,412**	**12,180**	
6	**11,599**	**11,382**	
7	**10,490**	**10,293**	
8	**11,582**	**11,365**	
9	**12,968**	**12,725**	
10	**14,720**	**14,444**	
11	**21,179**	**20,782**	
12	**86,744**	**85,118**	
13	**75,821**	**74,399**	
14	66,210	64,969	
15	57,686	56,604	
16	50,207	49,265	
17	44,667	43,829	
18	41,779	40,996	
19	36,645	35,958	
20	34,116	33,477	
21	30,464	29,893	
22	29,798	29,239	
23	26,083	25,594	
24	24,162	23,709	
25	21,686	21,279	
26	19,677	19,309	
27	17,827	17,493	
28	17,603	17,273	
29	16,284	15,979	
30	15,621	15,328	
31	14,476	14,204	
32	13,365	13,115	
Two-Pound Total	**905,258**	**888,286**	**-1.87%**
All Other Volume	**226,405**	**222,160**	**-1.87%**
Volume Forecast	**1,131,663**	**1,110,446**	**-1.87%**

Table 4
FY 1996
First-Class Single & Priority Mail Shares in Pieces Weighing Less than Two Pounds and Distributed by One-Ounce Increments

Weight Increment (Ounces)	First-Class Single Piece	Priority Mail	Total
	(1)	(2)	(3)
1	**99.99%**	**0.01%**	**100.00%**
2	**99.31%**	**0.69%**	**100.00%**
3	**98.55%**	**1.45%**	**100.00%**
4	**98.21%**	**1.79%**	**100.00%**
5	**97.68%**	**2.32%**	**100.00%**
6	**96.86%**	**3.14%**	**100.00%**
7	**96.13%**	**3.87%**	**100.00%**
8	**94.58%**	**5.42%**	**100.00%**
9	**92.48%**	**7.52%**	**100.00%**
10	**88.85%**	**11.15%**	**100.00%**
11	**80.90%**	**19.10%**	**100.00%**
12	**0.00%**	**100.00%**	100.00%
13	**0.00%**	**100.00%**	100.00%
14	**0.00%**	**100.00%**	100.00%
15	**0.00%**	**100.00%**	100.00%
16	**0.00%**	**100.00%**	100.00%
17	**0.00%**	**100.00%**	100.00%
18	**0.00%**	**100.00%**	100.00%
19	**0.00%**	**100.00%**	100.00%
20	**0.00%**	**100.00%**	100.00%
21	**0.00%**	**100.00%**	100.00%
22	**0.00%**	**100.00%**	100.00%
23	**0.00%**	**100.00%**	100.00%
24	**0.00%**	**100.00%**	100.00%
25	**0.00%**	**100.00%**	100.00%
26	**0.00%**	**100.00%**	100.00%
27	**0.00%**	**100.00%**	100.00%
28	**0.00%**	**100.00%**	100.00%
29	**0.00%**	**100.00%**	100.00%
30	**0.00%**	**100.00%**	100.00%
31	**0.00%**	**100.00%**	100.00%
32	**0.00%**	**100.00%**	100.00%
Total	**98.63%**	**1.37%**	**100.00%**

Table 5
First-Class Single Piece & Priority Mail
Price Differences by One-Ounce Increments
(Dollars)

Weight Increment (Ounces)	Current Rates			USPS Proposed Rates			PRC Recommended Rates		
	First-Class Single Piece	Priority Mail Piece	Price Difference	First-Class Single Piece	Priority Mail Piece	Price Difference	First-Class Single Piece	Priority Mail Piece	Price Difference
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
1	0.32	3.00	2.68	0.33	3.20	2.87	0.33	3.20	2.87
2	0.55	3.00	2.45	0.56	3.20	2.64	0.55	3.20	2.65
3	0.78	3.00	2.22	0.79	3.20	2.41	0.77	3.20	2.43
4	1.01	3.00	1.99	1.02	3.20	2.18	0.99	3.20	2.21
5	1.24	3.00	1.76	1.25	3.20	1.95	1.21	3.20	1.99
6	1.47	3.00	1.53	1.48	3.20	1.72	1.43	3.20	1.77
7	1.70	3.00	1.30	1.71	3.20	1.49	1.65	3.20	1.55
8	1.93	3.00	1.07	1.94	3.20	1.26	1.87	3.20	1.33
9	2.16	3.00	0.84	2.17	3.20	1.03	2.09	3.20	1.11
10	2.39	3.00	0.61	2.40	3.20	0.80	2.31	3.20	0.89
11	2.62	3.00	0.38	2.63	3.20	0.57	2.53	3.20	0.67
12	2.85	3.00	0.15	2.86	3.20	0.34	2.75	3.20	0.45
13	3.08	3.00	(0.08)	3.09	3.20	0.11	2.97	3.20	0.23
14		3.00	3.00		3.20	3.20		3.20	3.20
15		3.00	3.00		3.20	3.20		3.20	3.20
16		3.00	3.00		3.20	3.20		3.20	3.20
17		3.00	3.00		3.20	3.20		3.20	3.20
18		3.00	3.00		3.20	3.20		3.20	3.20
19		3.00	3.00		3.20	3.20		3.20	3.20
20		3.00	3.00		3.20	3.20		3.20	3.20
21		3.00	3.00		3.20	3.20		3.20	3.20
22		3.00	3.00		3.20	3.20		3.20	3.20
23		3.00	3.00		3.20	3.20		3.20	3.20
24		3.00	3.00		3.20	3.20		3.20	3.20
25		3.00	3.00		3.20	3.20		3.20	3.20
26		3.00	3.00		3.20	3.20		3.20	3.20
27		3.00	3.00		3.20	3.20		3.20	3.20
28		3.00	3.00		3.20	3.20		3.20	3.20
29		3.00	3.00		3.20	3.20		3.20	3.20
30		3.00	3.00		3.20	3.20		3.20	3.20
31		3.00	3.00		3.20	3.20		3.20	3.20
32		3.00	3.00		3.20	3.20		3.20	3.20

Table 6
Estimated Split Between Priority and First-Class Mail When the Rate Difference Between First-Class and the Minimum Rate for Priority Mail Does Not Exceed $0.38

Difference, Minimum Priority Mail Rate Less First-Class Rate ($)	Priority Mail Share	First-Class Share	Total
(1)	(2)	(3)	(4)
(0.00)	**100.00%**	0.00%	100.00%
0.01	**97.87%**	2.13%	100.00%
0.02	**95.74%**	4.26%	100.00%
0.03	**93.61%**	6.39%	100.00%
0.04	**91.48%**	8.52%	100.00%
0.05	**89.35%**	10.65%	100.00%
0.06	**87.23%**	12.77%	100.00%
0.07	**85.10%**	14.90%	100.00%
0.08	**82.97%**	17.03%	100.00%
0.09	**80.84%**	19.16%	100.00%
0.10	**78.71%**	21.29%	100.00%
0.11	**76.58%**	23.42%	100.00%
0.12	**74.45%**	25.55%	100.00%
0.13	**72.32%**	27.68%	100.00%
0.14	**70.19%**	29.81%	100.00%
0.15	**68.06%**	31.94%	100.00%
0.16	**65.94%**	34.06%	100.00%
0.17	**63.81%**	36.19%	100.00%
0.18	**61.68%**	38.32%	100.00%
0.19	**59.55%**	40.45%	100.00%
0.20	**57.42%**	42.58%	100.00%
0.21	**55.29%**	44.71%	100.00%
0.22	**53.16%**	46.84%	100.00%
0.23	**51.03%**	48.97%	100.00%
0.24	**48.90%**	51.10%	100.00%
0.25	**46.77%**	53.23%	100.00%
0.26	**44.65%**	55.35%	100.00%
0.27	**42.52%**	57.48%	100.00%
0.28	**40.39%**	59.61%	100.00%
0.29	**38.26%**	61.74%	100.00%
0.30	**36.13%**	63.87%	100.00%
0.31	**34.00%**	66.00%	100.00%
0.32	**31.87%**	68.13%	100.00%
0.33	**29.74%**	70.26%	100.00%
0.34	**27.61%**	72.39%	100.00%
0.35	**25.48%**	74.52%	100.00%
0.36	**23.36%**	76.64%	100.00%
0.37	**21.23%**	78.77%	100.00%
0.38	**19.10%**	80.90%	100.00%

Source: Response of witness Haldi to POIR No. 17,Attachment, Table

Table 7
Estimated Split Between Priority and First-Class Mail When the Rate Difference Between First-Class and the Minimum Rate for Priority Mail is Between $0.38 and $0.61.

Difference, Minimum Priority Mail Rate Less First-Class Rate ($)	Priority Mail Share	First-Class Share	Total
(1)	(2)	(3)	(4)
0.38	**19.10%**	80.90%	100.00%
0.39	**18.75%**	81.25%	100.00%
0.40	**18.41%**	81.59%	100.00%
0.41	**18.06%**	81.94%	100.00%
0.42	**17.72%**	82.28%	100.00%
0.43	**17.37%**	82.63%	100.00%
0.44	**17.02%**	82.98%	100.00%
0.45	**16.68%**	83.32%	100.00%
0.46	**16.33%**	83.67%	100.00%
0.47	**15.99%**	84.01%	100.00%
0.48	**15.64%**	84.36%	100.00%
0.49	**15.30%**	84.70%	100.00%
0.50	**14.95%**	85.05%	100.00%
0.51	**14.61%**	85.39%	100.00%
0.52	**14.26%**	85.74%	100.00%
0.53	**13.91%**	86.09%	100.00%
0.54	**13.57%**	86.43%	100.00%
0.55	**13.22%**	86.78%	100.00%
0.56	**12.88%**	87.12%	100.00%
0.57	**12.53%**	87.47%	100.00%
0.58	**12.19%**	87.81%	100.00%
0.59	**11.84%**	88.16%	100.00%
0.60	**11.50%**	88.50%	100.00%
0.61	**11.15%**	88.85%	100.00%

Source: Response of witness Haldi to POIR No. 17,Attachment, Table 2.

Table 8
TYBR
Migration of Two-Pound Priority Mail Volume to First-Class Letters Due to Increase in the Maximum Weight for First-Class Letters

Weight Increment (Ounces)	TYBR Price Difference (Priority Mail Less First Class)	TYBR Priority Mail Volume Before Change	TYBR Priority Mail Share After Change 1/	TYBR Priority Mail Volume After Change	Migration to First Class Due to Change	Add'l. Ozs. Volume
	(1)	(3)	(4)	(5)	(6)	(7)
12	**0.15**	86,744	**68.06%**	59,042	27,702	304,721
13	**(0.08)**	75,821	**100.00%**	75,821	0	0
Total		**162,565**		**134,863**	**27,702**	**304,721**

1/ The formula used to calculate the TY Priority Mail volume share is from page 2 of witness Haldi's Response to POIR No. 17 and is only applicable when the recommended price difference is less than or equal to $0.38. When the recommended price difference is between $0.38 and $0.61 the formula on page 3 of Dr. Haldi's response should be used.

Table 9
TYBR
Revenue Impact of Migration of Two-Pound Priority Mail Volume to First-Class Letters Due to Increase in the Maximum Weight of First-Class Letters

Weight Increment (Ounces)	Volume Migrating to First Class Due to Change		Reduction in Priority Mail Revenue	Increase in First Class Revenue	Net Change in Revenue
	First Ounce	Add'l. Ounces			
	(1)	(2)	(3)	(4)	(5)
12	27,702	304,721	(83,106)	78,950	(4,155)
13	0	0	0	0	0
Total	**27,702**	**304,721**	**(83,106)**	**78,950**	**(4,155)**

Table 10
TYAR
Migration of Two-Pound Priority Mail Volume to First-Class Letters Due to Increase in the Maximum Weight of First-Class Letters

Weight Increment (Ounces)	USPS Proposed Price Difference (Priority Mail Less First Class)	PRC Recom-mended Price Difference	TYAR Priority Mail Volume Before Change	TYAR Priority Mail Share After Change 1/	TYAR Priority Mail Volume After Change	Migration to First Class Due to Change	Add'l. Ozs. Volume
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
12	0.34	**0.45**	85,118	**16.68%**	14,196	70,921	780,133
13	0.11	**0.23**	74,399	**51.03%**	37,968	36,431	437,177
Total			**159,517**		**52,164**	**107,353**	**1,217,310**

1/ The formula used to calculate the TY Priority Mail volume share is from page 2 of witness Haldi's Response to POIR No. 17 and is only applicable when the recommended price difference is less than or equal to $0.38. When the recommended price difference is between $0.38 and $0.61 the formula on page 3 of Dr. Haldi's response should be used.

Table 11
TYAR
Revenue Impact of Migration of Two-Pound Priority Mail Volume to First-Class Letters Due to Increase in the Maximum Weight of First-Class Letters

Weight Increment (Ounces)	Volume Migrating to First Class Due to Change		Reduction in Priority Mail Revenue	Increase in First Class Revenue	Net Change in Revenue
	First Ounce	Add'l. Ounces			
	(1)	(2)	(3)	(4)	(5)
12	70,921	780,133	(226,948)	195,033	(31,915)
13	36,431	437,177	(116,581)	108,201	(8,379)
Total	**107,353**	**1,217,310**	**(343,528)**	**303,235**	**(40,294)**

Table 12
TYBR and TYAR
Two Pound Priority Mail Pieces
Distributed to One-Ounce Increments
After the Volume Migration to First Class
(In Thousands)

Weight Increment (Ounces)	TYBR (1)	TYAR (2)	Percent Change (3)
1	5,447	5,345	
2	27,296	26,784	
3	21,986	21,574	
4	14,657	14,382	
5	12,412	12,180	
6	11,599	11,382	
7	10,490	10,293	
8	11,582	11,365	
9	12,968	12,725	
10	14,720	14,444	
11	21,179	20,782	
12	**59,042**	**14,196**	
13	**75,821**	**37,968**	
14	66,210	64,969	
15	57,686	56,604	
16	50,207	49,265	
17	44,667	43,829	
18	41,779	40,996	
19	36,645	35,958	
20	34,116	33,477	
21	30,464	29,893	
22	29,798	29,239	
23	26,083	25,594	
24	24,162	23,709	
25	21,686	21,279	
26	19,677	19,309	
27	17,827	17,493	
28	17,603	17,273	
29	16,284	15,979	
30	15,621	15,328	
31	14,476	14,204	
32	13,365	13,115	
Two-Pound Total	**877,556**	**780,933**	**-11.01%**
All Other Volume	**226,405**	**222,160**	**-1.87%**
Volume Forecast	**1,103,961**	**1,003,093**	**-9.14%**

Table 13
Changes in First-Class Single Piece Letter and Priority Mail Volume and Assosiated Revenue Additions Caused by the Migration of Standard (A) Mail Single Piece Volume. The Change in Additions is Caused by the Increase in the Maximum Weight of First-Class Letters

Mail Class	Volume Before Increase in Maximum Weight	Volume After Increase in Maximum Weight	Change in Volume Migrating From Stand. A Single Piece	PRC Recom-mended Rates ($)	Revenue Before Increase in Maximum Weight	Revenue After Increase in Maximum Weight	Revenue Change Due to Increase in Maximum Weight
	(1)	(2)	(3)	(5)	(6)	(7)	(8)
First-Class Mail:							
Single-Piece Letters	141,420	150,693	9,273	**0.33**	46,669	49,729	3,060
Add'l Ounces	202,551	309,271	106,720	**0.22**	44,561	68,040	23,478
Nonstandard Pieces	1,428	1,428	0	**0.11**	157	157	0
Priority Mail	17,221	7,948	(9,273)	**3.20**	55,108	25,434	(29,674)
BPRS	4,783	4,783	0	**1.75**	8,370	8,370	0
Total	**163,424**	**163,424**	**0**		**154,865**	**151,729**	**(3,136)**

Table 14
Change in Additional Ounces of First-Class Single Piece Letters and Associated Revenue Losses Due to Introduction of Delivery Confirmation Service. The Change in Losses is Caused by the Increase in the Maximum Weight of First-Class Letters

Mail Class	Additional Ounces Lost Before Increase in Maximum Weight	Additional Ounces Lost After Increase in Maximum Weight	Change in Additional Ounces Lost	PRC Recom-mended Rates ($)	Revenue Lost Before Increase in Maximum Weight	Revenue Lost After Increase in Maximum Weight	Revenue Change Due to Increase in Maximum Weight
	(1)	(2)	(3)	(5)	(6)	(7)	(8)
First-Class Mail:							
Single-Piece Letters	(220,852)	(265,715)	(44,863)	**0.22**	(48,587)	(58,457)	**(9,870)**

Table 15
Direct and Indirect Impacts on First-Class Letter and Priority Mail Volumes and Revenues Caused by the Recommended Increase in the Maximum Weight of First-Class Letters
(Millions)

Mail Class	PRC Recommended Rates ($)	Direct Impact on First-Class and Priority		Impact Due to Standard (A) SP Classification Change		Impact Due to Introduction of Delivery Confirmation Service		Total Impact	
		Volume	Revenue	Volume	Revenue	Volume	Revenue	Volume	Revenue
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
First-Class Mail:									
Single-Piece Letters	**0.33**	107,353	35,426	9,273	3,060			**116,626**	**38,487**
Add'l Ounces	**0.22**	1,217,310	267,808	106,720	23,478	(44,863)	(9,870)	**1,279,168**	**281,417**
Nonstandard Pieces	**0.11**	0	0	0	0			**0**	**0**
Subtotal		**107,353**	**303,235**	**9,273**	**26,539**	**0**	**(9,870)**	**116,626**	**319,903**
Priority Mail	**3.20**	(107,353)	(343,528)	(9,273)	(29,674)			**(116,626)**	**(373,203)**
BPRS	**1.75**	0	0	0	0			**0**	**0**
Total		**0**	**(40,294)**	**0**	**(3,136)**	**0**	**(9,870)**	**0**	**(53,299)**

Table 16
TYAR
Cost of Migrating Two-Pound Priority Mail Volume
to First-Class Letters Due to Increase in the Maximum
Weight of First-Class Letters

Weight Increment (Ounces)	Volume Migrating to First Class (000)	Unit Cost 1/ ($)	Total Cost Before Contingency (000)	Contingency	Total Cost After Contingency (000)
(1)	(2)	(3)	(5)	(6)	(7)
12	70,921	1.76	125,060	1.01	126,311
13	36,431	1.79	65,180	1.01	65,832
Total	107,353		190,240		**192,142**

1/ The unit costs are calculated in PRC LR-12.

Cost Segment 1
Postmasters
Test Year After Rates ($ 000)

Category	EAS-22 & Below	EAS-23 & Above	BMC Managers	Total
1-LETTERS&PARCELS	114494	0	0	114494
-PRESORT LET&PAR	62532	0	0	62532
-PRIVATE CARDS	3501	0	0	3501
-PRESORT PRI CDS	2350	0	0	2350
PRIORITY	21360	0	0	21360
EXPRESS	4163	0	0	4163
MAILGRAM	0	0	0	0
2-IN COUNTY	424	0	0	424
-REGULAR RATE	8775	0	0	8775
-NONPROFIT	1736	0	0	1736
-CLASSROOM	39	0	0	39
3-SINGLE PIECE	824	0	0	824
-BRR CAR PRESORT	23001	0	0	23001
-BRR OTHER	43110	0	0	43110
-BRNP CAR PRESORT	1169	0	0	1169
-BRNP OTHER	6678	0	0	6678
4-ZONE RATE PARCELS	3782	0	0	3782
-BND PRNTED MATTER	2649	0	0	2649
-SPECIAL RATE	1979	0	0	1979
-LIBRARY RATE	258	0	0	258
USPS PENALTY	0	0	0	0
FREE FOR BLIND	0	0	0	0
INTERNATIONAL MAIL	7159	0	0	7159
SS-REGISTRY	502	0	0	502
-CERTIFIED	3360	0	0	3360
-INSURANCE	277	0	0	277
-COD	93	0	0	93
-SPECIAL DEL	0	0	0	0
-MONEY ORDERS	1353	0	0	1353
-STAMPED ENVLPS	85	0	0	85
-SPECIAL HNDLG	2	0	0	2
-LOCK&CALL BOX	3063	0	0	3063
-OTHER	0	0	0	0
TOTAL ATTRIBUTABLE	318716	0	0	318716
OTHER	1352177	38911	24	1391111
TOTAL COSTS	1670893	38911	24	1709828
% Attributable	191	0	0	186

Cost Segment 2
Supervisors
Test Year After Rates ($ 000)

Category	Direct Labor & Overhead	Window Services	City Delivery Carriers	Special Delivery Messengers	Time & Attendance	Higher Level Superv.	Gen. Supv. Mail Processing	Gen. Supv. Collection & Delivery	Other Superv. Training	Other Supv. & Techn.	Total
1-LETTERS&PARCELS	469004	46711	127303	57	17251	25649	467	87	15059	104476	806065
PRESORT LET&PAR	105767	2210	75670	28	5507	8373	105	42	4568	38929	241200
-PRIVATE CARDS	15272	3120	5749	3	638	983	15	4	571	4223	30579
-PRESORT PRI CDS	5257	94	3039	2	245	375	5	2	195	1679	10893
PRIORITY	57334	4587	7784	95	1782	2631	57	6	1652	12234	88163
EXPRESS	10985	2242	1347	3793	491	700	11	2	415	2216	22201
MAILGRAM	10	0	11	4	1	1	0	0	1	3	31
2-IN COUNTY	1482	44	1551	0	115	170	1	1	78	818	4261
-REGULAR RATE	43827	209	14521	2	1801	2636	44	8	1479	14901	79427
-NONPROFIT	7465	21	3713	0	374	550	7	2	288	3093	15514
-CLASSROOM	366	0	91	0	14	20	0	0	11	89	590
3-SINGLE PIECE	8831	252	1765	1	288	418	9	1	280	3064	14909
-BRR CAR PRESORT	24440	533	47291	0	2696	3906	24	26	1760	15324	96001
-BRR OTHER	178415	2637	70444	1	7450	11008	178	40	6036	43056	319263
-BRNP CAR PRESORT	2478	79	2608	0	174	254	2	1	122	982	6701
-BRNP OTHER	34214	868	14230	0	1454	2184	34	8	1262	8272	62527
4-ZONE RATE PARCELS	16467	706	2721	3	553	859	16	2	512	5525	27365
-BND PRNTED MATTER	8260	63	3437	0	379	544	8	2	309	3538	16540
-SPECIAL RATE	8345	325	1863	0	306	438	8	1	254	2082	13623
-LIBRARY RATE	1771	9	280	0	58	84	2	0	49	363	2615
USPS PENALTY	8094	1105	692	0	253	370	8	1	257	2901	13682
FREE FOR BLIND	1201	19	226	0	40	59	1	0	35	318	1900
INTERNATIONAL MAIL	21106	2160	1325	642	664	954	21	2	589	4048	31511
SS-REGISTRY	1595	822	347	3	84	108	2	1	63	365	3389
-CERTIFIED	2967	3921	6356	0	477	683	3	5	305	1894	16611
-INSURANCE	83	1120	173	0	38	53	0	0	31	150	1649
-COD	194	265	151	0	21	31	0	0	14	86	763
-SPECIAL DEL	0	0	0	0	0	0	0	0	0	0	0
-MONEY ORDERS	0	8417	0	0	190	267	0	3	185	788	9850
-STAMPED ENVLPS	0	113	0	0	3	4	0	0	2	10	132
-SPECIAL HNDLG	22	48	0	0	2	2	0	0	2	8	84
-LOCK&CALL BOX	0	5818	20	0	308	183	0	2	128	544	7003
-OTHER	8600	607	485	2	249	363	9	1	255	3002	13573
TOTAL ATTRIBUTABLE	1043852	89128	395192	4639	43905	64859	1039	250	36768	278981	1958614
OTHER	34593	93859	325827	4224	21514	131386	34	219	25700	823786	1461142
TOTAL COSTS	1078446	182987	721019	8863	65419	196246	1074	469	62468	1102766	3419756
% Attributable	968	487	548	523	671	331	968	533	589	253	573

Cost Segment 3
Clerks & Mailhandlers, CAG A-J
Test Year After Rates ($ 000)

Category	Variable Direct Labor	Window Services	Specific Fixed	Time & Attendance	Administ. Clerks	Total
1-LETTERS&PARCELS	5727380	540057	0	90808	475473	6833718
-PRESORT LET&PAR	1343647	25553	0	28991	153651	1551843
-PRIVATE CARDS	178313	36068	0	3361	18698	236440
-PRESORT PRI CDS	64906	1086	0	1290	6605	73887
PRIORITY	668176	53038	0	9381	42725	773320
EXPRESS	137890	25916	12035	2584	11544	189970
MAILGRAM	132	0	0	4	17	153
2-IN COUNTY	18084	509	0	606	2754	21953
-REGULAR RATE	537721	2420	0	9480	43524	593145
-NONPROFIT	91303	247	0	1968	9917	103436
-CLASSROOM	4492	0	0	72	323	4886
3-SINGLE PIECE	109453	2914	0	1515	7373	121255
-BRR CAR PRESORT	304706	6166	0	14190	66963	392025
-BRR OTHER	2200883	30493	0	39215	194644	2465235
-BRNP CAR PRESORT	30187	918	0	914	4920	36939
-BRNP OTHER	416745	10031	0	7655	42786	477218
4-ZONE RATE PARCELS	179551	6351	0	2933	13739	202574
-BND PRNTED MATTER	102423	732	0	1993	8144	113293
-SPECIAL RATE	103847	3758	0	1609	6963	116176
-LIBRARY RATE	22026	107	0	305	1292	23731
USPS PENALTY	101119	12776	0	1334	8427	123656
FREE FOR BLIND	14641	220	0	211	928	16000
INTERNATIONAL MAIL	257279	24972	0	3494	21050	306795
SS-REGISTRY	19820	9504	0	443	3389	33156
-CERTIFIED	37902	45333	0	2513	10897	96645
-INSURANCE	1044	12954	0	198	752	14948
-COD	2432	3067	0	113	670	6282
-SPECIAL DEL	0	0	0	0	0	0
-MONEY ORDERS	0	97320	0	999	3934	102253
-STAMPED ENVLPS	0	1302	0	14	52	1368
-SPECIAL HNDLG	259	558	0	8	35	862
-LOCK&CALL BOX	0	67260	0	1623	2700	71582
-OTHER	106820	7018	0	1312	9533	124683
TOTAL ATTRIBUTABLE	12783182	1028647	12035	231138	1174421	15229424
OTHER	434946	1085161	0	113252	645531	2278890
TOTAL COSTS	13218128	2113808	12035	344390	1819952	17508314
% Attributable	967	487	1000	671	645	870

Cost Segment 4
Clerks, CAG K
Test Year After Rates ($ 000)

Category	CAG K Clerks
1-LETTERS&PARCELS	2590
-PRESORT LET&PAR	634
-PRIVATE CARDS	79
-PRESORT PRI CDS	26
PRIORITY	138
EXPRESS	0
MAILGRAM	0
2-IN COUNTY	3
-REGULAR RATE	90
-NONPROFIT	15
-CLASSROOM	1
3-SINGLE PIECE	22
-BRR CAR PRESORT	66
-BRR OTHER	491
-BRNP CAR PRESORT	7
-BRNP OTHER	106
4-ZONE RATE PARCELS	0
-BND PRNTED MATTER	0
-SPECIAL RATE	0
-LIBRARY RATE	0
USPS PENALTY	0
FREE FOR BLIND	0
INTERNATIONAL MAIL	0
SS-REGISTRY	13
-CERTIFIED	17
-INSURANCE	1
-COD	2
-SPECIAL DEL	0
-MONEY ORDERS	0
-STAMPED ENVLPS	0
-SPECIAL HNDLG	0
-LOCK&CALL BOX	0
-OTHER	65
TOTAL ATTRIBUTABLE	4367
OTHER	5590
TOTAL COSTS	9957
% Attributable	439

Cost Segment 6
City Delivery Carriers - Office
Test Year After Rates ($ 000)

Category	Direct Labor	In-Office Support	CAG K and LTO	Total
1-LETTERS&PARCELS	960317	220900	104	1181320
-PRESORT LET&PAR	375556	116405	51	492012
-PRIVATE CARDS	39171	9720	4	48896
-PRESORT PRI CDS	15395	4601	2	19998
PRIORITY	33229	6391	3	39622
EXPRESS	2756	530	0	3286
MAILGRAM	0	0	0	0
2-IN COUNTY	10778	2163	1	12942
-REGULAR RATE	113795	22600	10	136405
-NONPROFIT	25984	5213	2	31200
-CLASSROOM	703	140	0	843
3-SINGLE PIECE	17184	3305	1	20490
-BRR CAR PRESORT	289675	57099	27	346801
-BRR OTHER	464572	104457	39	569067
-BRNP CAR PRESORT	18475	3650	2	22126
-BRNP OTHER	91612	21972	9	113593
4-ZONE RATE PARCELS	6039	1162	1	7201
-BND PRNTED MATTER	7886	1517	1	9404
-SPECIAL RATE	5924	1139	0	7064
-LIBRARY RATE	513	99	0	612
USPS PENALTY	6748	1298	1	8047
FREE FOR BLIND	1328	255	0	1584
INTERNATIONAL MAIL	8715	1676	1	10392
SS-REGISTRY	1142	220	0	1362
-CERTIFIED	27630	5314	2	32946
-INSURANCE	461	89	0	550
-COD	880	169	0	1050
-SPECIAL DEL	0	0	0	0
-MONEY ORDERS	0	0	0	0
-STAMPED ENVLPS	0	0	0	0
-SPECIAL HNDLG	0	0	0	0
-LOCK&CALL BOX	249	48	0	297
-OTHER	5597	1076	1	6674
TOTAL ATTRIBUTABLE	2532315	593205	262	3125782
OTHER	338116	65028	30	403174
TOTAL COSTS	2870430	658233	292	3528955
% Attributable	882	901	896	886

Cost Segment 7
City Delivery Carriers - Street
Test Year After Rates ($ 000)

Category	Elemental Load	Coverage Related Load	Single Subclass Access	Other Access	Route Time	Street Support	Total
1-LETTERS&PARCELS	248274	54202	180373	46317	8132	285585	822882
-PRESORT LET&PAR	220355	41882	139370	1437	8032	170425	581502
-PRIVATE CARDS	15854	1655	5508	2698	118	12922	38755
-PRESORT PRI CDS	11003	1347	4483	88	43	6849	23813
PRIORITY	26910	426	1420	28039	19295	18344	94435
EXPRESS	8052	29	96	7120	1394	3222	19914
MAILGRAM	30	0	0	69	60	27	186
2-IN COUNTY	6064	420	1396	241	1660	3522	13303
-REGULAR RATE	47824	3311	11017	1905	13103	32807	109967
-NONPROFIT	14380	994	3310	573	3938	8430	31625
-CLASSROOM	304	21	70	12	84	205	696
3-SINGLE PIECE	1689	39	131	2960	1114	3979	9913
-BRR CAR PRESORT	216546	26206	87207	1679	21150	107648	460436
-BRR OTHER	233049	34497	114798	2210	21986	159041	565580
-BRNP CAR PRESORT	11769	880	2929	151	649	5902	22280
-BRNP OTHER	57279	3584	11927	616	3360	32075	108841
4-ZONE RATE PARCELS	16808	168	559	6508	9160	6465	39667
-BND PRNTED MATTER	17110	162	536	16350	7408	8218	49783
-SPECIAL RATE	10020	99	329	6013	4161	4406	25027
-LIBRARY RATE	1524	10	33	904	1073	671	4214
USPS PENALTY	1195	146	487	239	263	1549	3880
FREE FOR BLIND	1491	25	84	45	142	516	2303
INTERNATIONAL MAIL	4308	204	679	3408	780	3051	12430
SS-REGISTRY	3806	0	0	0	0	801	4607
-CERTIFIED	61903	0	0	0	0	14608	76511
-INSURANCE	2021	0	0	0	0	400	2422
-COD	1207	0	0	0	0	344	1551
-SPECIAL DEL	0	0	0	0	0	0	0
-MONEY ORDERS	0	0	0	0	0	0	0
-STAMPED ENVLPS	0	0	0	0	0	0	0
-SPECIAL HNDLG	0	0	0	0	0	0	0
-LOCK&CALL BOX	0	0	0	0	0	43	43
-OTHER	601	0	0	0	0	1070	1671
TOTAL ATTRIBUTABLE	1241375	170307	566742	129584	127102	893125	3128235
OTHER	40728	559878	0	1573695	2238291	795546	5208139
TOTAL COSTS	1282103	730185	566742	1703279	2365393	1688671	8336374
% Attributable	968	233	1000	76	54	529	375

Cost Segment 8
Vehicle Service Drivers
Test Year After Rates ($ 000)

Category	Vehicle Service Drivers
1-LETTERS&PARCELS	30150
-PRESORT LET&PAR	20504
-PRIVATE CARDS	248
-PRESORT PRI CDS	250
PRIORITY	25392
EXPRESS	1623
MAILGRAM	1
2-IN COUNTY	2496
-REGULAR RATE	32360
-NONPROFIT	6131
-CLASSROOM	235
3-SINGLE PIECE	504
-BRR CAR PRESORT	39750
-BRR OTHER	49873
-BRNP CAR PRESORT	1816
-BRNP OTHER	7574
4-ZONE RATE PARCELS	27264
-BND PRNTED MATTER	15607
-SPECIAL RATE	5695
-LIBRARY RATE	649
USPS PENALTY	997
FREE FOR BLIND	622
INTERNATIONAL MAIL	5611
SS-REGISTRY	0
-CERTIFIED	0
-INSURANCE	0
-COD	0
-SPECIAL DEL	0
-MONEY ORDERS	0
-STAMPED ENVLPS	0
-SPECIAL HNDLG	0
-LOCK&CALL BOX	0
-OTHER	0
TOTAL ATTRIBUTABLE	275352
OTHER	168621
TOTAL COSTS	443973
% Attributable	620

Cost Segment 9
Special Delivery Messengers
Test Year After Rates ($ 000)

Category	Salaries - Office	Salaries - Street	Equipment Maintenc. Allowance	Special Delivery Fees	Fixed Attrib.	Total
1-LETTERS&PARCELS	137	578	0	0	0	715
-PRESORT LET&PAR	90	259	0	0	0	349
-PRIVATE CARDS	7	32	0	0	0	40
-PRESORT PRI CDS	5	18	0	0	0	23
PRIORITY	301	876	0	0	0	1178
EXPRESS	12267	34951	0	0	44070	91288
MAILGRAM	14	40	0	0	0	54
2-IN COUNTY	1	2	0	0	0	3
-REGULAR RATE	6	18	0	0	0	25
-NONPROFIT	1	4	0	0	0	5
-CLASSROOM	0	0	0	0	0	0
3-SINGLE PIECE	1	7	0	0	0	8
-BRR CAR PRESORT	1	4	0	0	0	5
-BRR OTHER	3	7	0	0	0	9
-BRNP CAR PRESORT	0	0	0	0	0	0
-BRNP OTHER	1	2	0	0	0	4
4-ZONE RATE PARCELS	10	30	0	0	0	41
-BND PRNTED MATTER	1	2	0	0	0	3
-SPECIAL RATE	1	2	0	0	0	3
-LIBRARY RATE	1	2	0	0	0	3
USPS PENALTY	0	1	0	0	0	1
FREE FOR BLIND	0	0	0	0	0	0
INTERNATIONAL MAIL	2051	5946	0	0	7497	15494
SS-REGISTRY	3	37	0	0	0	40
-CERTIFIED	0	0	0	0	0	0
-INSURANCE	0	0	0	0	0	0
-COD	0	3	0	0	0	3
-SPECIAL DEL	0	0	0	0	0	0
-MONEY ORDERS	0	0	0	0	0	0
-STAMPED ENVLPS	0	0	0	0	0	0
-SPECIAL HNDLG	0	0	0	0	0	0
-LOCK&CALL BOX	0	0	0	0	0	0
-OTHER	1	18	0	0	0	19
TOTAL ATTRIBUTABLE	14905	42840	0	0	51568	109314
OTHER	4181	48396	0	0	-51568	1009
TOTAL COSTS	19087	91236	0	0	0	110323
% Attributable	781	470	0	0	0	991

Cost Segment 10
Rural Carriers
Test Year After Rates ($ 000)

Category	Evaluated Routes	Other Routes	Equipment Maintenc. Allowance	Total
1-LETTERS&PARCELS	275798	27482	0	303280
-PRESORT LET&PAR	262496	26348	0	288844
-PRIVATE CARDS	18468	1876	0	20344
-PRESORT PRI CDS	13464	1376	0	14840
PRIORITY	14361	1448	0	15810
EXPRESS	4550	509	0	5060
MAILGRAM	12	1	0	13
2-IN COUNTY	13161	1271	0	14433
-REGULAR RATE	103874	10034	0	113908
-NONPROFIT	31211	3015	0	34226
-CLASSROOM	660	63	0	723
3-SINGLE PIECE	1202	122	0	1324
-BRR CAR PRESORT	240000	23088	0	263088
-BRR OTHER	357836	35126	0	392962
-BRNP CAR PRESORT	11548	1122	0	12670
-BRNP OTHER	74301	7351	0	81652
4-ZONE RATE PARCELS	9222	934	0	10157
-BND PRNTED MATTER	10559	1064	0	11623
-SPECIAL RATE	5287	534	0	5821
-LIBRARY RATE	1149	116	0	1265
USPS PENALTY	1192	116	0	1308
FREE FOR BLIND	709	70	0	779
INTERNATIONAL MAIL	2312	229	0	2541
SS-REGISTRY	1760	197	0	1957
-CERTIFIED	55386	6201	0	61587
-INSURANCE	2626	293	0	2919
-COD	2864	318	0	3182
-SPECIAL DEL	0	0	0	0
-MONEY ORDERS	1346	82	0	1428
-STAMPED ENVLPS	0	0	0	0
-SPECIAL HNDLG	0	0	0	0
-LOCK&CALL BOX	0	0	0	0
-OTHER	24	3	0	27
TOTAL ATTRIBUTABLE	1517377	150391	0	1667767
OTHER	1556461	149228	336387	2042076
TOTAL COSTS	3073838	299619	336387	3709843
% Attributable	494	502	0	450

Cost Segment 11
Custodial and Maintenance Services
Test Year After Rates ($ 000)

Category	Cleaning and Protection	Postal Oper.Equip. Maint.	Contract Cleaners	Total
1-LETTERS&PARCELS	243453	444589	11003	699044
-PRESORT LET&PAR	73657	118367	3329	195353
-PRIVATE CARDS	7780	12175	352	20307
-PRESORT PRI CDS	2867	3822	130	6818
PRIORITY	39785	10149	1798	51732
EXPRESS	8910	827	403	10139
MAILGRAM	7	1	0	8
2-IN COUNTY	1388	327	63	1777
-REGULAR RATE	28779	19344	1301	49424
-NONPROFIT	5342	3519	241	9103
-CLASSROOM	238	210	11	459
3-SINGLE PIECE	4691	5945	212	10848
-BRR CAR PRESORT	32611	16124	1474	50209
-BRR OTHER	112193	128754	5071	246017
-BRNP CAR PRESORT	2336	1839	106	4281
-BRNP OTHER	22053	26743	997	49793
4-ZONE RATE PARCELS	13385	13262	605	27252
-BND PRNTED MATTER	6957	7203	314	14475
-SPECIAL RATE	6385	7920	289	14594
-LIBRARY RATE	1185	1525	54	2763
USPS PENALTY	3877	3153	175	7205
FREE FOR BLIND	765	1074	35	1873
INTERNATIONAL MAIL	10644	19185	481	30310
SS-REGISTRY	6616	454	299	7370
-CERTIFIED	7798	321	352	8472
-INSURANCE	711	9	32	752
-COD	433	18	20	470
-SPECIAL DEL	1	0	0	1
-MONEY ORDERS	4022	0	182	4203
-STAMPED ENVLPS	56	0	3	59
-SPECIAL HNDLG	44	15	2	61
-LOCK&CALL BOX	104314	0	4714	109028
-OTHER	4557	4820	206	9583
TOTAL ATTRIBUTABLE	757838	851695	34250	1643783
OTHER	422264	227088	19084	668436
TOTAL COSTS	1180102	1078782	53334	2312219
% Attributable	642	789	642	711

Cost Segment 12
Motor Vehicle Service
Test Year After Rates ($ 000)

Category	City Carriers	Spec.Del. Messengers	Veh. Serv. Drivers	Rural Carriers	Other	Total
1-LETTERS&PARCELS	60853	97	5973	363	0	67285
-PRESORT LET&PAR	43466	43	3792	322	0	47624
-PRIVATE CARDS	3100	5	48	24	0	3176
-PRESORT PRI CDS	1874	3	38	14	0	1928
PRIORITY	10327	147	4225	16	0	14714
EXPRESS	3057	5855	308	6	0	9225
MAILGRAM	22	7	0	0	0	29
2-IN COUNTY	1021	0	477	17	0	1515
-REGULAR RATE	8146	3	6234	132	0	14516
-NONPROFIT	2428	1	1241	42	0	3712
-CLASSROOM	53	0	60	1	0	114
3-SINGLE PIECE	895	1	89	1	0	986
-BRR CAR PRESORT	37023	1	7950	317	0	45291
-BRR OTHER	42775	1	7829	372	0	50977
-BRNP CAR PRESORT	1829	0	402	17	0	2247
-BRNP OTHER	8666	0	1316	86	0	10068
4-ZONE RATE PARCELS	4017	5	5333	12	0	9367
-BND PRNTED MATTER	6262	0	2825	13	0	9100
-SPECIAL RATE	2818	0	1031	6	0	3856
-LIBRARY RATE	453	0	129	2	0	584
USPS PENALTY	272	0	237	2	0	512
FREE FOR BLIND	202	0	109	1	0	311
INTERNATIONAL MAIL	1529	996	1157	3	0	3685
SS-REGISTRY	517	6	0	3	0	526
-CERTIFIED	7400	0	0	66	0	7466
-INSURANCE	240	0	0	3	0	244
-COD	158	1	0	5	0	163
-SPECIAL DEL	24	0	0	0	0	25
-MONEY ORDERS	0	0	0	2	0	2
-STAMPED ENVLPS	0	0	0	0	0	0
-SPECIAL HNDLG	0	0	0	0	0	0
-LOCK&CALL BOX	1	0	0	0	0	1
-OTHER	199	3	0	0	0	202
TOTAL ATTRIBUTABLE	249625	7176	50802	1846	0	309449
OTHER	276230	8093	33252	1913	19498	338986
TOTAL COSTS	525855	15269	84053	3759	19498	648435
% Attributable	475	470	604	491	0	477

Cost Segment 13
Miscellaneous Operating Costs
Test Year After Rates ($ 000)

Category	Mail Equipment Shops	Proc.Off. & Supply Centers	Contract Station Service	Carfare & Driveout City Carr.	Carfare Spec. Del. Messengers	Other Carfare	Other Costs	Total
1-LETTERS&PARCELS	0	0	0	2539	4	0	0	2544
-PRESORT LET&PAR	0	0	0	1576	2	0	0	1578
-PRIVATE CARDS	0	0	0	118	0	0	0	118
-PRESORT PRI CDS	0	0	0	65	0	0	0	65
PRIORITY	0	0	0	143	7	0	0	150
EXPRESS	0	0	0	28	285	0	0	313
MAILGRAM	0	0	0	0	0	0	0	0
2-IN COUNTY	0	0	0	32	0	0	0	32
-REGULAR RATE	0	0	0	296	0	0	0	296
-NONPROFIT	0	0	0	77	0	0	0	77
-CLASSROOM	0	0	0	2	0	0	0	2
3-SINGLE PIECE	0	0	0	32	0	0	0	32
-BRR CAR PRESORT	0	0	0	1034	0	0	0	1035
-BRR OTHER	0	0	0	1476	0	0	0	1476
-BRNP CAR PRESORT	0	0	0	57	0	0	0	57
-BRNP OTHER	0	0	0	305	0	0	0	305
4-ZONE RATE PARCELS	0	0	0	55	0	0	0	55
-BND PRNTED MATTER	0	0	0	67	0	0	0	67
-SPECIAL RATE	0	0	0	37	0	0	0	37
-LIBRARY RATE	0	0	0	5	0	0	0	5
USPS PENALTY	0	0	0	13	0	0	0	13
FREE FOR BLIND	0	0	0	5	0	0	0	5
INTERNATIONAL MAIL	0	0	0	26	48	0	0	74
SS-REGISTRY	0	0	0	9	0	0	0	10
-CERTIFIED	0	0	0	164	0	0	0	164
-INSURANCE	0	0	0	5	0	0	0	5
-COD	0	0	0	4	0	0	0	4
-SPECIAL DEL	0	0	0	0	0	0	0	0
-MONEY ORDERS	0	0	0	0	0	0	0	0
-STAMPED ENVLPS	0	0	0	0	0	0	0	0
-SPECIAL HNDLG	0	0	0	0	0	0	0	0
-LOCK&CALL BOX	0	0	0	0	0	0	0	0
-OTHER	0	0	0	9	0	0	0	9
TOTAL ATTRIBUTABLE	0	0	0	8181	348	0	0	8529
OTHER	7515	58406	77114	4576	317	43769	90319	282016
TOTAL COSTS	7515	58406	77114	12757	665	43769	90319	290545
% Attributable	0	0	0	641	523	0	0	29

Cost Segment 14
Transportation
Test Year After Rates ($ 000)

Category	Domestic Air	Alaskan Air	Contract Highway	Railroad	Domestic Water	Inter-national Transp.	Total
1-LETTERS&PARCELS	328242	17	268928	4426	1507	0	603120
-PRESORT LET&PAR	191406	0	74166	1163	537	0	267272
-PRIVATE CARDS	5984	0	2982	25	15	0	9006
-PRESORT PRI CDS	1281	0	1666	43	6	0	2996
PRIORITY	563094	174	282097	3429	540	0	849335
EXPRESS	163207	0	29030	219	44	0	192500
MAILGRAM	0	0	0	0	0	0	0
2-IN COUNTY	0	0	64	0	0	0	64
-REGULAR RATE	14125	26	178842	76912	3373	0	273277
-NONPROFIT	3203	7	40822	16878	829	0	61739
-CLASSROOM	97	0	1167	446	24	0	1735
3-SINGLE PIECE	3676	42	22611	4562	611	0	31502
-BRR CAR PRESORT	1238	102	40761	9915	1038	0	53054
-BRR OTHER	15874	115	240318	79404	8093	0	343805
-BRNP CAR PRESORT	16	0	3666	1938	205	0	5824
-BRNP OTHER	6025	4	40870	13428	1601	0	61929
4-ZONE RATE PARCELS	7428	17607	159355	35028	5236	0	224653
-BND PRNTED MATTER	1880	24	52732	7174	1112	0	62923
-SPECIAL RATE	609	21	44771	13556	1780	0	60738
-LIBRARY RATE	332	4	9285	2695	329	0	12645
USPS PENALTY	5113	31	3972	201	60	946	10323
FREE FOR BLIND	289	0	3075	748	57	0	4169
INTERNATIONAL MAIL	14002	0	9167	5381	413	707447	736409
SS-REGISTRY	0	0	0	0	0	0	0
-CERTIFIED	0	0	0	0	0	0	0
-INSURANCE	0	0	0	0	0	0	0
-COD	0	0	0	0	0	0	0
-SPECIAL DEL	0	0	0	0	0	0	0
-MONEY ORDERS	0	0	0	0	0	0	0
-STAMPED ENVLPS	0	0	0	0	0	0	0
-SPECIAL HNDLG	0	0	0	0	0	0	0
-LOCK&CALL BOX	0	0	0	0	0	0	0
-OTHER	0	0	0	0	0	0	0
TOTAL ATTRIBUTABLE	1327123	18175	1510348	277572	27409	708393	3869019
OTHER	0	68126	349671	1878	442	0	420116
TOTAL COSTS	1327123	86301	1860019	279449	27851	708393	4289136
% Attributable	1000	211	812	993	984	1000	902

Cost Segment 15
Building Occupancy
Test Year After Rates ($ 000)

Category	Rents	Fuel & Utilities	Communi-cations	Building Projects Expensed	Other	Total
1-LETTERS&PARCELS	217658	88585	0	0	0	306243
-PRESORT LET&PAR	66747	26802	0	0	0	93548
-PRIVATE CARDS	7221	2831	0	0	0	10052
-PRESORT PRI CDS	2621	1043	0	0	0	3664
PRIORITY	34418	14476	0	0	0	48894
EXPRESS	8509	3242	0	0	0	11751
MAILGRAM	6	2	0	0	0	9
2-IN COUNTY	1272	505	0	0	0	1777
-REGULAR RATE	24657	10472	0	0	0	35128
-NONPROFIT	4682	1944	0	0	0	6626
-CLASSROOM	199	87	0	0	0	286
3-SINGLE PIECE	4045	1707	0	0	0	5752
-BRR CAR PRESORT	30332	11866	0	0	0	42198
-BRR OTHER	98397	40824	0	0	0	139221
-BRNP CAR PRESORT	2129	850	0	0	0	2979
-BRNP OTHER	19469	8024	0	0	0	27493
4-ZONE RATE PARCELS	11061	4870	0	0	0	15931
-BND PRNTED MATTER	6006	2532	0	0	0	8538
-SPECIAL RATE	5468	2323	0	0	0	7791
-LIBRARY RATE	1003	431	0	0	0	1434
USPS PENALTY	3395	1411	0	0	0	4806
FREE FOR BLIND	644	278	0	0	0	922
INTERNATIONAL MAIL	9282	3873	0	0	0	13155
SS-REGISTRY	6159	2408	0	0	0	8567
-CERTIFIED	7586	2838	0	0	0	10423
-INSURANCE	695	259	0	0	0	954
-COD	416	158	0	0	0	574
-SPECIAL DEL	1	0	0	0	0	1
-MONEY ORDERS	3959	1463	0	0	0	5422
-STAMPED ENVLPS	55	20	0	0	0	75
-SPECIAL HNDLG	41	16	0	0	0	57
-LOCK&CALL BOX	105513	37957	0	0	0	143470
-OTHER	4038	1658	0	0	0	5696
TOTAL ATTRIBUTABLE	687685	275753	0	0	0	963438
OTHER	0	153649	229060	171758	21321	575788
TOTAL COSTS	687685	429402	229060	171758	21321	1539226
% Attributable	1000	642	0	0	0	626

Cost Segment 16
Supplies & Services
Test Year After Rates ($ 000)

Category	Custodial & Building	Stamps & Dispensers	Money Orders	Equip. Maint. Supplies	Expedited Mail Supplies	Adver-tising	Compreh. Track. & Tracing	Rem. Enc. Supplies & Services	Emboss. Stmp. Envel./Postal Cards	Other Costs	Total
1-LETTERS&PARCELS	289467	218564	0	114405	0	136	0	878	0	0	623449
-PRESORT LET&PAR	87579	5474	0	28271	0	98	0	177	0	0	121598
-PRIVATE CARDS	9250	10484	0	3534	0	8	0	29	4699	0	28003
-PRESORT PRI CDS	3408	336	0	1167	0	5	0	6	0	0	4922
PRIORITY	47304	1326	0	11963	167908	64312	0	0	0	0	292814
EXPRESS	10593	0	0	2091	22691	0	90314	0	0	0	125689
MAILGRAM	8	0	0	2	0	0	0	0	0	0	10
2-IN COUNTY	1650	0	0	300	0	0	0	0	0	0	1950
-REGULAR RATE	34218	0	0	9838	0	0	0	4	0	0	44060
-NONPROFIT	6352	0	0	1721	0	0	0	0	0	0	8072
-CLASSROOM	283	0	0	89	0	0	0	0	0	0	372
3-SINGLE PIECE	5578	258	0	2437	0	0	0	6	0	0	8280
-BRR CAR PRESORT	38774	1788	0	6074	0	937	0	15	0	0	47588
-BRR OTHER	133398	9771	0	47121	0	968	0	75	0	0	191333
-BRNP CAR PRESORT	2778	346	0	612	0	0	0	0	0	0	3736
-BRNP OTHER	26221	3354	0	9566	0	0	0	15	0	0	39156
4-ZONE RATE PARCELS	15915	65	0	5755	0	0	161	0	0	0	21896
-BND PRNTED MATTER	8272	16	0	3075	0	0	0	0	0	0	11363
-SPECIAL RATE	7592	67	0	3437	0	0	0	0	0	0	11096
-LIBRARY RATE	1409	9	0	671	0	0	0	0	0	0	2089
USPS PENALTY	4610	0	0	1817	0	0	0	6	0	0	6433
FREE FOR BLIND	909	0	0	398	0	0	0	0	0	0	1307
INTERNATIONAL MAIL	12655	6189	0	5390	0	17473	12917	16	0	0	54640
SS-REGISTRY	7867	0	0	336	0	0	0	0	0	0	8203
-CERTIFIED	9272	0	0	567	0	0	0	2	0	0	9841
-INSURANCE	845	0	0	16	0	0	0	0	0	0	862
-COD	515	0	0	37	0	0	0	0	0	0	552
-SPECIAL DEL	1	0	0	0	0	0	0	0	0	0	1
-MONEY ORDERS	4782	0	4679	0	0	0	0	0	0	0	9461
-STAMPED ENVLPS	67	0	0	0	0	0	0	0	12238	0	12305
-SPECIAL HNDLG	52	0	0	7	0	0	0	0	0	0	59
-LOCK&CALL BOX	124030	0	0	0	0	0	0	0	0	0	124030
-OTHER	5418	0	0	1951	0	0	0	5	0	0	7373
TOTAL ATTRIBUTABLE	901073	258048	4679	262645	190599	83937	103392	1233	16937	0	1822544
OTHER	502074	186	0	131114	0	215064	0	0	0	870710	1719149
TOTAL COSTS	1403147	258235	4679	393760	190599	299001	103392	1233	16937	870710	3541693
% Attributable	642	999	1000	667	1000	281	1000	1000	1000	0	515

Cost Segment 18
Administrative and Regional Operations
Test Year After Rates ($ 000)

Category	USPS Protection Force	Money Order Division	Other Personnel	Repriced Annual Leave	Unfunded Retirement Liability	Workers Comp.	Annuitant COLA/LI	Annuitant Health Benefits	Unemploy. Compen.	Other Costs	Total
1-LETTERS&PARCELS	16784	0	0	13767	301029	160082	152605	155072	21810	1029	821178
-PRESORT LET&PAR	5078	0	0	4395	96106	51108	48401	49508	6963	328	261889
-PRIVATE CARDS	536	0	0	510	11140	5924	5611	5739	807	38	30305
-PRESORT PRI CDS	198	0	0	196	4276	2274	2153	2203	310	15	11623
PRIORITY	2743	0	0	1422	31100	16538	15662	16021	2253	106	85846
EXPRESS	614	0	0	392	8566	4555	4314	4413	621	29	23504
MAILGRAM	0	0	0	1	13	7	6	7	1	0	35
2-IN COUNTY	96	0	0	92	2009	1069	1012	1035	146	7	5465
-REGULAR RATE	1984	0	0	1437	31425	16711	15826	16188	2277	107	85956
-NONPROFIT	368	0	0	298	6525	3470	3286	3361	473	22	17805
-CLASSROOM	16	0	0	11	237	126	119	122	17	1	650
3-SINGLE PIECE	323	0	0	230	5022	2670	2529	2587	364	17	13742
-BRR CAR PRESORT	2248	0	0	2151	47039	25015	23690	24232	3408	161	127945
-BRR OTHER	7735	0	0	5945	129999	69131	65470	66968	9419	444	355111
-BRNP CAR PRESORT	161	0	0	139	3031	1612	1526	1561	220	10	8260
-BRNP OTHER	1520	0	0	1161	25377	13495	12781	13073	1839	87	69332
4-ZONE RATE PARCELS	923	0	0	441	9652	5133	4861	4972	699	33	26715
-BND PRNTED MATTER	480	0	0	302	6607	3514	3328	3404	479	23	18135
-SPECIAL RATE	440	0	0	244	5334	2837	2686	2748	386	18	14694
-LIBRARY RATE	82	0	0	46	1012	538	510	521	73	3	2786
USPS PENALTY	267	0	0	202	4422	2352	2227	2278	320	15	12084
FREE FOR BLIND	53	0	0	32	701	373	353	361	51	2	1926
INTERNATIONAL MAIL	734	0	0	530	11583	6159	5833	5967	839	40	31685
SS-REGISTRY	456	0	0	67	1468	780	739	756	106	5	4378
-CERTIFIED	538	0	0	381	8332	4431	4196	4292	604	28	22802
-INSURANCE	49	0	0	30	657	350	331	339	48	2	1805
-COD	30	0	0	17	375	199	189	193	27	1	1031
-SPECIAL DEL	0	0	0	0	0	0	0	0	0	0	1
-MONEY ORDERS	277	3286	0	156	3404	1810	1715	1754	247	118	12767
-STAMPED ENVLPS	4	0	0	2	46	24	23	24	3	0	126
-SPECIAL HNDLG	3	0	0	1	28	15	14	14	2	0	78
-LOCK&CALL BOX	7192	0	0	246	5379	2860	2709	2771	390	18	21564
-OTHER	314	0	0	199	4350	2313	2191	2241	315	15	11938
TOTAL ATTRIBUTABLE	52246	3286	0	35044	766246	407475	385898	394723	55517	2725	2103160
OTHER	29112	0	944594	18484	404169	339973	203548	208204	29283	281992	2459359
TOTAL COSTS	81358	3286	944594	53528	1170415	747448	589446	602927	84800	284717	4562519
% Attributable	642	1000	0	655	655	545	655	655	655	10	461

Cost Segment 20
Depreciation and Servicewide Costs
Test Year After Rates ($ 000)

Category	Vehicle Deprec.	Mail Proc. Equipment Deprec.	Building & Leasehold Deprec.	Domestic Indemn.	International Indemn.	Capital Interest Expense	Retirement Interest Expense	Other Interest Expense	Other Costs	Total
1-LETTERS&PARCELS	20058	329535	188854	0	0	60808	414453	0	0	1013708
-PRESORT LET&PAR	15804	100077	57914	0	0	19627	132318	0	0	325740
-PRIVATE CARDS	939	8174	6265	0	0	1737	15338	0	0	32453
-PRESORT PRI CDS	644	3121	2274	0	0	682	5887	0	0	12608
PRIORITY	3560	10664	29863	0	0	4979	42818	0	0	91884
EXPRESS	2802	1142	7383	547	0	1279	11794	0	0	24947
MAILGRAM	6	2	6	0	0	1	18	0	0	32
2-IN COUNTY	479	325	1103	0	0	215	2767	0	0	4890
-REGULAR RATE	4541	14658	21394	0	0	4584	43265	0	0	88442
-NONPROFIT	1149	2772	4063	0	0	902	8984	0	0	17869
-CLASSROOM	31	166	173	0	0	42	326	0	0	737
3-SINGLE PIECE	180	4998	3510	0	0	981	6914	0	0	16583
-BRR CAR PRESORT	14948	13948	26318	0	0	6235	64763	0	0	126213
-BRR OTHER	17325	111198	85376	0	0	24156	178981	0	0	417036
-BRNP CAR PRESORT	717	1602	1847	0	0	471	4173	0	0	8810
-BRNP OTHER	3328	23976	16892	0	0	4991	34939	0	0	84127
4-ZONE RATE PARCELS	2598	10940	9597	0	0	2613	13289	0	0	39038
-BND PRNTED MATTER	2093	5827	5212	0	0	1483	9097	0	0	23711
-SPECIAL RATE	943	6619	4744	0	0	1390	7344	0	0	21040
-LIBRARY RATE	135	1277	870	0	0	258	1393	0	0	3933
USPS PENALTY	136	2386	2946	0	0	617	6089	0	0	12174
FREE FOR BLIND	105	783	559	0	0	163	965	0	0	2574
INTERNATIONAL MAIL	994	9910	8054	0	365	2141	15947	0	0	37411
SS-REGISTRY	159	1358	5344	2222	95	775	2021	0	0	11973
-CERTIFIED	2551	780	6582	0	0	1119	11471	0	0	22503
-INSURANCE	83	21	603	11571	684	80	905	0	0	13947
-COD	50	48	361	1927	0	52	516	0	0	2954
-SPECIAL DEL	0	0	1	0	0	0	1	0	0	2
-MONEY ORDERS	0	0	3435	0	0	388	4687	0	0	8510
-STAMPED ENVLPS	0	0	48	0	0	5	63	0	0	116
-SPECIAL HNDLG	0	17	35	0	0	6	39	0	0	97
-LOCK&CALL BOX	0	0	91550	0	0	10339	7405	0	0	109294
-OTHER	26	3740	3504	0	0	821	5989	0	0	14079
TOTAL ATTRIBUTABLE	96383	670064	596680	16267	1145	153940	1054957	0	0	2589436
OTHER	106684	469882	0	0	0	65113	556455	27599	202675	1428407
TOTAL COSTS	203067	1139946	596680	16267	1145	219053	1611412	27599	202675	4017843
% Attributable	475	588	1000	1000	1000	703	655	0	0	644

Test-Year After-Rates Cost Adjustments - Supporting Detail
($000's)

Classification	Stamped Card Manuf. Cost	Delivery Confirmation Cap. Costs	Delivery Confirmation	Package Services	Third Single Piece	Parcel/ Spec. Serv. Reform	Standard (A)	1st Cl. Max Wgt Adjust.	1% Haldi Adjust.	CEM Educat.	Prior/Exp Volume Adj.	Total
First Class Mail												
Single Letters & Parcels		7,851	(39,774)	-	236,167	-	-	190,345		33,000		427,590
Worksharing Letters		4,636	-	-	-	-	-					4,636
Total Letters	-	12,487	(39,774)	-	236,167	-	-	190,345		33,000		432,225
Single Cards	(4,699)	367	-	-	-	-	-					(4,332)
Worksharing Cards		200	-	-	-	-	-					200
Total Cards	(4,699)	567	-	-	-	-	-	-		-		(4,132)
Total First Class Mail	(4,699)	13,054	(39,774)	-	236,167	-	-	190,345		33,000		428,093
Priority Mail		488	85,791	1,855	14,607	-	-	(190,345)			(11,520)	(99,124)
Express Mail		94	(8,934)	898	-	-	-				(4,799)	(12,740)
Mailgrams		1	-	-	-	-	-					1
Periodicals												
In County		131	-	-	-	-	-					131
Regular Rate		1,149	-	-	-	-	-					1,149
Nonprofit		312	-	-	-	-	-					312
Classroom		7	-	-	-	-	-					7
Total Periodicals	-	1,600	-	-	-	-	-	-		-		1,600
Standard Mail A												
Single Piece		108	-	-	(256,973)	-	(108)					(256,973)
Commercial Enhanced		3,642	-	-	-	-	(32,185)		1,399			(27,144)
Commercial Regular		5,198	-	-	-	-	(270,487)		12,004			(253,285)
Commercial Total	-	8,840	-	-	-	-	(302,671)	-	13,403	-		(280,429)
Nonprofit Enhanced		194	-	-	-	-	(4,350)		(1,399)			(5,554)
Nonprofit		1,035	-	-	-	-	(30,306)		(12,004)			(41,275)
Nonprofit Total	-	1,229	-	-	-	-	(34,656)	-	(13,403)	-		(46,830)
Total Standard Mail A	-	10,176	-	-	(256,973)	-	(337,435)	-	-	-		(584,232)
Standard Mail B												
Parcel Post		194	4,517	(180)	-	(8,711)	-					(4,179)
Bound Printed Matter		241	-	-	-	15,889	-					16,130
Special		129	-	-	-	(596)	-					(467)
Library		21	37	-	-	(18)	-					39
Total Standard Mail B	-	585	4,555	(180)	-	6,564	-	-		-		11,523
USPS Penalty Mail		45										45
Free for Blind & Hndcpd.		16										16
International Mail		86										86
Special Services												
Registry		27	-	-	-	-	-					27
Certified		582	(4,402)	-	-	-	-					(3,820)
Insurance		20	-	-	-	5,401	-					5,421
COD		20	-	-	-	-	-					20
Money Orders		-	-	-	-	-	-					-
Stamped Envelopes		5	-	-	-	-	-					5
Special Handling		-	-	-	-	-	-					-
Post Office Box		1	-	-	-	-	-					1
Stamped Cards	4,699											4,699
Delivery Confirmation	21,920											21,920
BPRS					6,199							6,199
Packaging Service	27,481											27,481
Return Receipts	13,154											13,154
Restricted Delivery	315											315
Other	13,469	28	-	-	-	-	-					13,497
Total Special Services	13,469	683	(4,402)	-	-	5,401	-	-		-		15,151

COMPARISON OF STS AND LTV MEASURES OF ACCRUED LOAD TIME

The STS survey results are used to apportion total accrued carrier street time to its constituent functions, including load time and runtime. This apportioning step precedes any efforts to identify the attributable portion of the constituent functions. Econometric techniques are then used to decompose load time into elemental and coverage-related portions, and to decompose runtime into route time and access time.

In the STS survey, a technician briefed each sampled carrier on the concepts and purpose of the survey before the carrier began his route. On his route, at three randomly selected times, the carrier was paged and asked to record what he was doing. When the carrier completed his route, he was debriefed by the technician.

Based on the carrier's description, the technician decided whether the sampled activity belonged to load time or runtime. Docket No. R87-1, USPS-LR-E-6 at A-1, B-3. The technician did this by confirming that the carrier was either physically stopped (recorded as "AT"), or moving (recorded as "TO" or "FROM"), in relation to a list of possible locations. The activities counted as load time were those recorded as "AT Delivery Stop--Curbline, and "AT Delivery Stop--Not Curbline." The activities recorded as "TO Delivery Stop--Curbline," and "FROM Delivery Stop--Not Curbline" were counted as runtime. Docket No. R87-1, USPS-T-7B at 12. The instructions rigorously defined these terms for the technician. Docket No. R87-1, USPS-LR-E-6 at F-1, G-18 through G-21, H-3. This loadtime/runtime boundary is unambiguous, leaving little room for interpretation.[1]

In the LTV survey, engineers directly observed carriers while they were delivering mail on their route. As the carrier approached, stopped, loaded mail, and departed from

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[1] Also included in STS load time were tallies recorded as "AT--Delivery Not Routine," "TO--Delivery Not Routine", and "FROM--Delivery not Routine." While the definition of "Not Routine" is necessarily imprecise, these activities account for less than two percent of total STS load time. *See* Docket No. R87-1, USPS-T-7 at 19.

the sampled stop, the engineer clocked the seconds spent on each of the following categories: 1) prep, 2) load, 3) attend, 4) interstop, 5) other, and 6) testing delay. In the LTV survey, the first three categories are counted as load time.

As the LTV instructions define these categories, the boundary between load time and runtime is essentially the same as in the STS survey. All time spent physically stopped at a stop is counted as load time. All time spent moving between stops is runtime ("interstop" time). The only category in the LTV survey that doesn't fit neatly on one side or the other of this boundary is the "other" category. The LTV survey defines "prep" time as "time spent handling mail at or adjacent to a stop." It defines "load" time as "time spent at a stop to place mail into or onto a delivery receptacle . . .." It defines "attend" time as "time spent serving or awaiting a customer with a mail item requiring individual treatment." Docket No. R87-1, USPS-LR-E-4 at 39. Time at the stop spent not handling mail (what witness Crowder assumes accounts for the large discrepancy between STS and LTV accrued load time) doesn't qualify as "prep," "load," or "attend" time. Therefore, if there were a significant category of time at the stop spent not handling mail, it must be recorded in the "other" category. Non-routine ("other") activity, however, appears to be less than two percent of the total. *See* Docket No. R87-1, USPS-T-7 at 19. It cannot begin to explain why LTV total accrued load time is almost 30 percent less than STS total accrued load time.

In support of her assumption that the definition of load time is broader in the STS survey, witness Crowder offers specific examples of activities at a stop that there are likely to be counted in STS accrued load time but not in LTV accrued load time. These include opening and closing the satchel and mail box ,Tr. 29/16190-91, collecting mail from collection boxes, customer contacts, "'accesses' among delivery points within multiple delivery stops," and delivery retraces. Id. at 16206-207.

The instructions for the STS and LTV surveys show that they would agree on how to categorize most of the activities cited by witness Crowder. Both STS and LTV would include opening and closing a satchel and a mailbox as load time, contrary to witness Crowder's assumption. The LTV instructions specifically include opening and closing a

mailbox as "load," and placing a letter in a satchel as "prep." *See* Docket No. R87-1, USPS LR-E-4 at 41. Both STS and LTV would exclude collecting mail from collection boxes from load time, contrary to her assumption. (Collecting mail from collection boxes is specifically excluded from STS load time. *See* Docket No. R87-1, USPS-T-7 at 19, 28, 46, 53.) While it is possible that the range of customer contacts counted as load time is not identical in the two surveys, there is little room for discrepancy, since the LTV definition of "attend" time is so broad. For example, it includes the time that it takes to ring a doorbell and wait, even when there is no response. It also includes going from a multiple party mailbox in an apartment house to and from a resident's apartment to deliver a parcel. *See* Docket No. R87-1, USPS-T-7 at 19, USPS LR-E-4 at 39. The latter is an example of "accesses among delivery points within multiple delivery stops" that witness Crowder speculates were not included in LTV load time. Of witness Crowder's list of examples, the only activity that appears likely to be consistently included as load time in the STS survey, but not the LTV survey is retrace time. [2]

The definitions of load time in the STS and the LTV surveys are essentially the same. Both count as load time all time that the carrier spends at a stop, and both exclude from load time all time moving between stops. In the LTV survey the only time that a carrier might spend at the stop that is not counted as load time is non-routine activity category, which, as noted above, is less than two percent of the LTV total. Such minor definition differences clearly cannot explain why LTV total accrued load time is almost 30 percent less than STS accrued load time. Since the timing of these surveys, their administration, and their purpose (to estimate attributable street time costs for ratemaking) are consistent, they cannot explain the discrepancy either.

It is important to apply the elasticity of elemental load time estimated from the LTV model to a measure of accrued load time that is consistent with that model's properties.

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[2] This is because retrace time is likely to qualify as "TO (or FROM)--Delivery Not Routine," which are categories of load time in the STS survey [USPS-LR-E-6 at G-21], while in the LTV survey, retrace time is categorized as "interstop" time. USPS LR-E-4 at 42. However, neither the "TO (or FROM)--Delivery Not Routine" categories in the STS survey, nor the retrace time in the LTV study, account for more than two percent of STS load time. *See* Docket No. R87-1, USPS-T-7 at 19.

It is equally important that the elemental elasticity be applied to a measure of accrued load time that reflects its true proportion to the other functional components of accrued carrier street time. Witness Crowder's solution is to assume that the discrepancy represents access time, rather than load time. The Commission has concluded, however, that the two surveys measure essentially the same load time activities. Another explanation of the relationship between the two estimates of accrued load is necessary.

There is no direct evidence that explains why STS-based accrued load time is so much higher than the LTV-based figure. The major difference between the two surveys is that in the LTV survey, the technicians directly observed carriers delivering mail on their routes, while in the STS survey, they did not. The most plausible explanation of the lower LTV figure is that it has something to do with being directly observed.

There is little reason to assume that directly observing carriers on their routes would cause the LTV survey to count less runtime as load time than the STS survey. Both surveys define load time essentially as all time spent physically stopped at a stop, and access time as all time spent moving between stops. In both surveys, trained technicians determined whether an activity was performed while at a stop or moving between stops. To make this determination it is not likely to matter whether the technician directly observed carriers covering their routes, or tallied and debriefed them afterward.

Rather than reducing the range of activity recorded as load time, there is more reason to assume that directly observing carriers perform their work would affect the pace at which they do their work.[3] A carrier is likely to perform both access and load activities at a maximum pace when these activities are under the direct observation of an industrial engineer. Due to the incentive structure that applies to city delivery carriers, there is likely to be a substantial difference between the normal pace at which they cover

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[3] In another context ,Postal Service witness Degen assumes that postal employees are likely to alter the performance of their duties if they know that their performance is being directly measured or audited. Tr. 36/19463.

their route, and the maximum pace at which they could cover a sample portion of it. Unlike rural carriers who can go home if they complete their routes early, there is no reward for city delivery carriers who consistently complete their routes early, except the likelihood that their routes will be enlarged.

The assumption that LTV-based accrued load time is less than the STS figure because it more narrowly defines load time has little empirical support. There is more support for the assumption that the LTV figure is lower because carriers have an incentive to perform both access and load-related activities at a faster pace if they are being directly observed. This implies that the LTV figure is lower than the LTV figure by a constant proportion over the range of volume. This inference is consistent with the data. It shows that while the average volume per stop has grown slowly over the decade since the two surveys were conducted, the proportion of STS to LTV accrued load time has remained essentially unchanged. Tr. 29/16205-207.

POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

February 24, 1998

The Honorable Sam Winters
Chairman
Board of Governors
United States Postal Service
475 L'Enfant Plaza SW
Washington, DC 20260-1000

Dear Chairman Winters:

On July 10,1997, the Postal Service filed a request for rate changes. It projected that the Service would fall approximately $2.4 billion short of "break even" in fiscal year 1998 if rates were not adjusted. The Postal Rate Commission established Docket No. R97-1 to consider the Postal Service request.

The Commission, the Postal Service, and some 80 formal intervenors have been striving to develop a complete and accurate hearing record, and the Commission plans to transmit a recommended decision within the 10-month period prescribed by 39 U.S.C. § 3624.

The Commission is fully aware that the responsibility for choosing when to initiate new rate cases and when to implement new rates rests solely with the Board of Governors. However, a unique confluence of events surrounding the R97-1 docket leads the Commission to communicate the following serious concern to the Board, and to suggest that our agencies take unprecedented action to maintain public confidence in the system for setting postal rates.

As the Board is aware, for the Commission to recommend rates that accurately reflect the costs caused by each of the classes of mail and fairly apportion the institutional costs of the Service among mailers in accordance with the policies of the Act, it needs reliable, up-to-date information. Postal Service data systems are not expected to generate final audited FY 1997 information soon enough for use by the Commission in this case under the current schedule. For the following reason, the Commission is concerned that this may result in an outcome that does not sufficiently reflect actual events, thereby causing many mailers to pay inappropriate rates.

L-1

Given the current record, the rates that the Commission recommends will depend on projections from results experienced in 1996. There are reasons to question whether 1996 results are representative of what the Postal Service's costs, volumes and revenues are likely to be. The current rates and classification structure, and many operations associated with reclassification, were not implemented until the last quarte of 1996. Consequently, projections are extrapolations from a 1996 mail stream whos cost and revenue characteristics have since undergone significant change. Clearly, rates based on post-reclassification (FY 1997) data would better represent Postal Service costs, volumes, and revenues in 1998 and beyond.

Another advantage of having FY 1997 data on which to base rates is that it would all the Commission to incorporate recent unexpected surpluses attributable to the Posta Service's successful cost reduction programs and favorable trends in the volumes an mix of mail. As a result of successful management and a strong national economy, t Postal Service's operating results for FY 1997 were significantly better than projectec the R97-1 filing. The 1997 Annual Report of the Postal Service reported a net operating surplus of $1.26 billion, some $.63 billion higher than forecast. This better-than-expected performance appears to be continuing. The Postal Service enjoyed a net operating surplus in the first quarter of FY 1998 of $.98 billion, $.43 billion more than it enjoyed in the first quarter of 1997.

We suggest that our agencies fashion a cooperative procedure that would enable the Commission to recommend rates in this case that reflect the results of operations during the periods immediately prior to the implementation of those rates, while preserving the financial prerogatives of the Board.

The Board could direct that actual FY 1997 data be compiled and provided to the Commission in the near future. The Commission would require approximately three months to incorporate this data into a recommended decision. The financial risk to t Postal Service of extending R97-1 in this manner should be minimal, given the Posta Service's strong financial position.

The alternative, delaying implementation of recommended rates developed under the current schedule until such time as financial conditions require, would result in rates flawed by the fact that they reflect pre-reclassification operating results rather than m representative, recent, fiscal and operating realities.

The Commission urges the Board to consider the benefits to the entire mailing community of the cooperative procedure suggested. It would help assure that rate changes, when implemented, reflect Postal Service operating realities. Please note that to maintain confidence in the open and public nature of the ratemaking process,

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copy of this letter has been provided to all participants in the current omnibus rate case and will be published on the Commission's website. With optimism that any unidentified procedural hurdles can be overcome, we remain

Sincerely,

Edward J. Gleiman, Chairman

George W. Haley, Vice Chairman

W. H. LeBlanc, III, Commissioner

George A. Omas, Commissioner

cc: Tom Koerber

SAM WINTERS
CHAIRMAN
BOARD OF GOVERNORS

UNITED STATES POSTAL SERVICE

March 3, 1998

Honorable Edward J. Gleiman
Chairman
Postal Rate Commission
Washington, DC 20268-0001

Dear Commissioner Gleiman:

Thank you for your thoughts on the rate proceeding now pending before the Commission. In light of our statutory responsibilities, the Board of Governors has concluded that it should not comment at this time on the state of the evidentiary record currently being developed by the Commission. Because of the importance to the American people of stable and reasonable postal rates, however, we do wish to comment on your letter.

The Board of Governors continues to feel that the moderate adjustment proposed in its July 1997 filing is appropriate. It will enable the Postal Service to continue to invest in the facilities, equipment and systems necessary to hold down costs and to continue the improvements in service quality that we have experienced in recent years. This properly-sized, moderate rate adjustment will also have the effect of forestalling larger rate changes in the future.

The Board and the management of the Postal Service have worked diligently to improve service quality while maintaining prices at the lowest possible levels. In fact, we were able to avoid filing for a general rate increase for a much longer time than was originally thought possible. In filing the current request for new rates, we seek to continue this policy. The one-cent increase requested for the basic First-Class rate as part of the overall increase averaging 4.5 percent is not only the smallest increase ever requested but also is only half of the inflation rate since the last general rate change. To the degree possible, we have attempted to moderate the increases for each mail classification, while remaining consistent with the policies of the Postal Reorganization Act.

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The Board recognizes that it is a challenge in every omnibus rate proceeding for the Commission to develop a sound evidentiary record and recommend rates based on that record. Nevertheless, we are confident that, as in prior cases, the Commission will develop recommendations consistent with the Policies of the Act, within the ten months mandated by Congress. The Act provides that, following the issuance of the Commission's recommendations, the Governors have open to them a variety of options by which the good of the mailing public may be well served. One of these options will, after careful deliberation, be exercised at the appropriate time. Moreover, as you recognize, if the Governors decide that recommended rates should be put into effect, the Board's discretion over the timing of the rate implementation provides an additional means to provide for the best transition to new rates.

Rest assured that the members of the Board will weigh all relevant factors in exercising their statutory authority and performing their public duty.

Very truly yours,

Sam Winters